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THE

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Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Polypus of the Uterus.* By J. MATTHEWS DUNCAN, M.D.

THIS is a well-known disease peculiar to women, and of great importance, from the loss of blood which it frequently occasions. Malignant polypi are rare, and of such I shall at present say nothing. Ordinary polypi may be of three different kinds: mucous, fibrous, and fibrinous.

Mucous polypi are most frequent. Amongst sixty-six cases of polypus, of which I have kept notes during several recent years, I find forty-one belong to the class of mucous polypi. Among them I found varieties. Several were single cysts, probably enlarged Nabothian follicles. Such polypi, bursting when compressed by the forceps, leave only their thin walls between the blades, to represent a growth, which may have been as large as a pea or a field bean. Many were simple outgrowths of mucous membrane, like the polypi so frequent in the nose. These were all of small size, rarely equalling in bulk the terminal phalanx of the little finger. Ten of the forty-one mucous polypi were of a kind that is often called glandular. These were sometimes as large as a walnut, and presented on their surface several large apertures, from which exuded viscid mucus, like that of the cervix uteri. These apertures communicated with variously-shaped cavities in the interior of the polypus, which sometimes also communicated one with another; the whole mass evidently consisting of hypertrophied cervical glands. One of these glandular polypi was long and narrow, of the kind called by some a pendulum polypus. A few of the forty-one mucous polypi were fibro-cellular, formed of a layer of mucous membrane, enclosing a mass of loose connective tissue, whose fibres had no definite arrangement. The largest of these was about the size of a small walnut, and was connected with the cervix of a uterus that contained a small fibroid.

These mucous polypi were all attached to some part of the cervix uteri, except one, about the size of a pea, which bled freely, and which was attached to the mucous membrane of the body of the uterus. The great majority of them were easily felt by the examining finger. Some glandular polypi were so soft, glabrous, and mobile as to escape detection in a large vagina when the examiner was inexperienced. Some small ones were concealed within the cervix, whose external os required dilatation for their discovery. Sometimes little ones were hidden in the cervix behind a bigger one, which obstructed the passage of the finger to the more distant and smaller.

On several occasions, these mucous polypi occurred as complications of pregnancy, of fibrous tumour, and of prolapsus.

I have a specimen of a remarkable polypus, attached to the upper part of the cervix, which pursued an extraordinary course. Instead of growing downwards into the cervix and then into the vagina, it has grown upwards into the body of the uterus, which it distends; its bulk being that of a common boy's marble.

The fibrous polypi were, like the mucous class, of various kinds. Among the sixty-six polypi already referred to, twenty-two were fibrous.

Of these, one, nearly as large as an egg, with a thick pedicle, having a considerable artery pulsating in it, was a continuous outgrowth. It complicated pregnancy and gave rise to bloody discharge. It was attached to the cervix. A second smaller one of this kind occurred among the sixty-six. It complicated prolapsus uteri.

Sixteen were true fibrous polypi; that is, they consisted of a fibrous tumour of the uterus, enclosed within a capsule of proper uterine muscular tissue, which generally was thin, sometimes absent at the most prominent part, and gradually thickened as the stalk was approached; the whole being invested in a layer of mucous membrane. In some of them, venous canals could be seen beneath the mucous membrane, and in some these canals seemed to open on the surface. In one profusely bleeding fibrous polypus, there were distinct venous openings on the most dependent part of the polypus, and further communication could be traced between these venous canals and a series of cavities, in the substance of the fibroid, which were filled with old fluid blood, more or less brown or decolorized. Another of these polypi, about the size of an egg, complicating pregnancy, but giving rise to no hæmorrhage, was attached to the margin of the os uteri by a large base. The rest had their attachments more or less deeply within the cervix, or even still higher up. The smallest of the sixteen true fibrous polypi was of the size of a walnut, the largest as big as a closed fist; but I have seen one nearly as large as an adult fœtal head. True fibrous polypi do not always owe their size exclusively to their constituents already named—mucous membrane, muscular capsule, and fibrous tumour proper; but may be greatly swollen out by œdema. In one case where the polypus was equal in size to a large orange, and attached to the cervix, the tissues between the mucous membrane and the contained fibroid were distended by transparent watery fluid so as to be at the lower part of the polypus nearly an inch thick. This œdema does not necessarily depend upon the position of the fibroid, for it is sometimes seen, in an extreme degree, in large embedded fibroids of the body of the uterus. I have seen an enormous succulent fibroid of this kind discharge, on being tapped, several ounces of thin watery fluid tinged with blood; and this tendency to œdema may in part account for the watery discharges from uterine fibroids, whether polypi or embedded.

Authors systematically describe true fibrous polypi as being frequently produced by extrusion from the uterine wall; that is, an embedded uterine fibroid is said to become a pediculated true fibrous polypus. I cannot deny that this process occurs, but I have never observed it, nor have I read any detailed circumstantial report of its actual occurrence. No doubt, a polypus may change its position. As it grows, it may ascend from its insertion up into the cavity of the body of the uterus. I have a preparation demonstrating this curious direction of growth. Most polypi descend. I have observed a large polypus descend during menstruation, and ascend after it ceased, so completely that it could not be felt. Such change of position may naturally give rise to belief in the extrusion of a fibroid from the uterine wall, and the formation in this way of a true fibrous polypus. My own impression is, that at least the great majority of polypi are more or less protuberant from their first beginning. This opinion may be otherwise stated, by saying that I believe it improbable, as it is certainly not proved, that an embedded fibroid becomes first a protuberant or polypoid fibroid, and lastly a true stalked polypus. On the other hand, I have repeatedly seen an embedded fibroid become a false fibrous polypus.

Of the twenty-two fibrous polypi, four were false fibrous polypi, as I denominate them. Three of them were naked fibroids lying in the vagina, and attached to the uterus only by a small part of their surface. One, of enormous size, was only partially denuded of its investments, and might, with propriety, be excluded from among polypi; with this exception, the false fibrous polypi were just spontaneously enucleated fibrous tumours, whose still remaining connexions with the fibrous tissue of the uterus formed their false pedicles. It is, I believe, polypi of this kind that have given rise to the com[illegible] mon belief in the formation of true fibrous polypi, by extrus[illegible] a still invested fibroid from the uterine wall. All these fals[illegible] polypi were large; two of them about the size of a fœtal [illegible] largest of them was certainly attached high in the body of the uterus; the attachment of the other was not exactly made out.

The three fibrinous polypi occurred in the puerperal state. The smallest was equal in size to a garden cherry, the largest to a plover's egg. The fact of their containing chorionic structures near their insertion showed that they were attached to the site of the placenta, and explained their production according to accepted pathological views.

A polypus has no essential symptoms, if we distinguish symptoms from signs. Many polypi, indeed most, excluding the false fibrous and the fibrinous, have neither symptoms nor signs attracting attention. A woman may have a large true fibrous polypus without herself or her physician having the slightest reason to suspect its presence. Among the sixty-six cases of polypi to which we have referred, a large proportion was discovered in a purely accidental manner. Among these were numerous polypi of various kinds; and at least one was a true fibrous polypus.

I know no symptoms of uterine polypus worthy of description. No doubt, various kinds of pain or uneasiness may be caused by them, but there is nothing distinctive in these sensations. Nor have I observed any sympathetic phenomena that I could satisfactorily refer to this cause. When the polypus is large, its mere bulk may cause annoyance: for example, a large false fibrous polypus descending produced, in one of my cases, retention of urine, and this was the first indication of its presence.

The great sign of polypus is that loss of blood which is the main source of the importance of the disease. This hæmorrhage may be menorrhagic—that is, occurring at the menstrual periods; but it may be incessant, or it may be accidental, occurring at any time. It is also highly important to remark that a polypus may exist without any hæmorrhage whatever, and even grow while there is suppression of the menses, or while the menstrual flow is gradually getting scantier. I have never seen a false fibrous polypus, or a fibrinous polypus, which was not at some time or other the cause of bloody discharge. But the frequency, and therefore the importance, of bloody discharge or hæmorrhage has been generally very much exaggerated by describers. Among the forty-one mucous polypi to which I have already referred, nineteen, or about a half, caused no extraordinary loss of blood whatever; while in several there was less than ordinary loss, and in some none of any kind.

It is rare to find considerable loss of blood produced by a small polypus, but I have observed it. The largest losses dangerous to life, which I have seen, were produced by true fibrous polypi, or by false fibrous polypi, which were undergoing extrusion from the co[illegible]rine wall. In only one of the twenty-two fibrous polypi was attac[illegible] no extraordinary loss of blood.

had the[illegible] a mucous polypus causes serious loss of blood or anæmia, still highe[illegible] not by a flooding or in a short time, but by constant or nearly constant slight oozing. Of course, to produce anæmia, the oozing must be to an amount greater than the system can repair as fast as it flows. On the other hand, bleeding from a fibrous polypus is generally more profuse; sometimes it deserves the name of a flooding. I have seen a woman's life in imminent danger from a single flooding in a case of true fibrous polypus, and it is not rare to observe cases where two or three hæmorrhages have produced the most aggravated anæmia and all its painful consequences. Mucous polypi comparatively seldom, and comparatively slowly, produce extreme anæmia. Among the sixty-six cases to which I have been referring as mostly occurring recently in my practice, none proved fatal. In more than one it was my opinion that life could not have been much prolonged if an operation had not been performed. My impression, founded on experience, is that death from bleeding in a case of polypus is much more uncommon than in a case of ordinary fibrous tumour.

Besides blood, mucous or muco-purulent fluid is frequently discharged from the vagina in cases of polypus. Such discharge may be of the nature of a simple vaginal or cervical uterine leucorrhœa, or it may be produced by superficial ulceration of the polypus or of the cervix uteri.

In cases of fibrous polypi, whether true or false, there is frequently a more or less copious watery discharge, of a more irritating kind than the ordinary leucorrhœal discharge, and sometimes to such an extent as to be weakening.

A woman can never be said to have a polypus unless the practitioner has either felt or seen it; in most cases he can easily both see and feel it. A mucous polypus is generally soft and rounded, but it may be dense and have various shapes. To the eye it generally presents a darker red tint than the neighbouring parts, as also does a fibrous polypus. Sometimes a true fibrous polypus is hard and nodulated, and of a very pale or yellowish white colour.

A false fibrous polypus is hard, nodulated, and very pale in colour, except occasionally, when it is much soiled by long lying in the genital passages. A true fibrous polypus is not always hard. When it is œdematous, it may be soft, and even deceive the practitioner, causing him to believe that he has to do with a bag of fluid. A fibrinous polypus may be broken down by the finger, disrupting its outer fibrinous wall.

Polypi certainly have no sensitiveness, and at least generally no sensation.

When a practitioner suspects the existence of polypus, and yet, on a vaginal examination, does not find it, he has to consider whether he will further pursue the search for it. If this further search is merely carried the length of dilating the external os uteri, the practitioner may proceed without any anxiety. But if he proposes to dilate the whole length of the cervix for the passage of his examining finger, he must proceed with the greatest circumspection.

For the exploratory operation may itself be injurious, even more so than the disease which is as yet only suspected to exist. Metritis, ovaritis, perimetritis, parametritis, are frequent results of this exploration, and death itself may be a consequence. I entertain a belief—of which, however, I have no sufficient evidence—that the forcible dilatation of the cervix uteri, in cases whose upshot shows that it was required, is not nearly so liable to be followed by untoward accidents as when it is done in cases which turn out not to have required it. Similar statements have been frequently made as to other dangerous remedies, and a so-called law of toleration, founded on such facts or fancies, has been enunciated.

It is very rarely, indeed, that dilatation of the whole cervix is required. In only one of the sixty-six cases was it resorted to in order to discover the disease.

Dilatation is effected by means of a tangle-tent. Sometimes a small one may be first used to begin the dilatation; and after it has done all in its power, or in about twenty-four hours, it is replaced by a larger; and again, by one even still larger. The tent, with a string attached to its lower end, is seized by a vaginal forceps, or throat forceps, and passed into the uterus. It is well to introduce a small sponge into the vagina to keep it *in situ*. It is removed by pulling the string attached to its lower end. After the removal of the tent, the index-finger of one hand is passed into and through the cervix, while the other hand, pressing on the abdomen above the pubes, pushes the womb downwards upon the examining finger.

Besides this kind of exploration, very little is required in the way of diagnosing a polypus. A cauliflower excrescence has a rough surface, friable texture, a broad attachment, constant fleshwater discharge, and free bleeding when handled; characters which a polypus does not present. Chronic inversion of the uterus—a very rare affection—may cause a little more difficulty than a cauliflower excrescence. It is to be distinguished by the following points: its history, its occasional sensitiveness, its regularity of form, the largeness of the part which may be mistaken for a pedicle, the absence of the body of the uterus in its natural situation, and the impossibility of passing far up a probe at any part between the cervix uteri and the suspected pedicle. But it is a general rule that a complication or complications are the cause of extraordinary difficulty in diagnosis; and the practitioner must remember that a polypus may complicate an inversion of the uterus.

There is nothing simpler than to tell what should be done in a case of polypus. It should be removed.

In most cases the operation is very easy. A small mucous polypus may be removed by torsion. It, or its pedicle, is seized by an appropriate long forceps, and, by twisting, removed or divided. This little operation may be done with the aid of a speculum or without it. When the polypus is not very small, exceeding in size the phalanx of a small finger, it is best to clip through the pedicle of the polypus by an appropriate curved scissors. When the polypus is not large, and the woman has borne a child, the duck-bill speculum may be used to expose the polypus with a view to the operation; but it is generally convenient to dispense with a speculum of any kind. The operation may be done without an assistant, but it is better to have one. The operator seizes the polypus with a volsella in order to fix it, and in order in some cases also to pull it nearer the os vaginæ. The operator then guides an appropriate curved scissors by the fingers of one hand to the stalk of the polypus. His other hand holding the scissors makes it grasp and cut the pedicle. A pretty long curved scissors is generally used, but most such instruments are badly made, the cutting parts being too long and weak, in consequence of which they yield and disappoint the operator by refusing to cut. This error, however, is easily corrected by any cutler.

Instruments have been invented for cutting through the pedicle of a polypus, but they are illustrations of misplaced ingenuity. There is no difficulty in cutting through the pedicle of any polypus, and nothing is better for the purpose than a bistoury or an appropriate scissors. There is occasionally difficulty in reaching the stalk of a polypus, but no instrument for dividing the stalk will facilitate this part of the operation. A bistoury or a scissors will reach the stalk, if it be accessible, better than any other instrument.

The operator, in the case of a large polypus, may find the operation of removal very difficult. The difficulty lies, not in dividing the pedicle, but in getting sufficient access to it. In the case of an enormous polypus, where the difficulty is greatest, the division of the pedicle, if it could be effected as a preliminary to the operation of removal of the polypus, would make little difference in the difficulty of doing so. In a case of this kind, the difficulty is almost exactly that of delivering a fœtal head through a contracted outlet or over a rigid perineum. In both cases the perineum is likely to be torn, and sometimes the laceration extends even through the sphincter ani.

In cases of false fibrous polypi, the operator not unfrequently finds it unnecessary formally to divide the pedicle at all. Having fixed one or two volsellæ in the tumour to pull it through the os vaginæ, he finds, when the birth of the tumour is effected, that the false pedicle is also divided. I have never seen this happen with the true pedicle of a true fibrous polypus. On examining a false fibrous polypus after it has been removed in the way described, it is easy to distinguish the recently separated connexions from the rest of the surface of the tumour which has been for some time lying bare in the genital passages.

The ordinary operation, in the case of a large polypus, consists in fixing one or more volsellæ in the polypus, dragging it forwards through the orifice of the vagina, and then cutting through the pedicle as soon as it can be reached. If the pedicle be short, this dragging down involves considerable displacement of the uterus; but really the displacement is not very great, if the shortest route for the cervix uteri—that is, following the direction of the anterior wall of the vagina—is pursued. The stalk of a polypus does not require to be cut off; it shrinks and soon disappears.

As already said, the difficulty of operating for an enormous polypus is sometimes very great, and the difficulty consists in getting it out of the vagina. The getting access to the pedicle is a matter of comparatively little importance. Yet when the pedicle is reached all the difficulties of the operation are past, not because the pedicle is reached, but because the bulk of the tumour is extracted from the vagina. Many plans have been proposed for facilitating the extraction—such as cutting out a wedge-shaped portion of the accessible part of the tumour, or cutting the tumour spirally, as it is called. But these plans have an appearance of precision which I have been unable to imitate. I proceed on a simpler plan, removing portion after portion of the tumour, and this, if possible, in such a way as always to leave a convenient bit of the tumour projecting from the remaining part, by which piece a good hold is got for pulling the tumour further down. So, bit by bit, the whole is removed.

A fibrinous polypus may come away spontaneously; or it may be detached and removed by the finger, used in a hook-like manner, as the obstetrician frequently employs it to remove early abortions; or it may be broken up and pulled away by a forceps.

After removing any kind of polypus, no bleeding is to be expected. In a case of small mucous polypus, or false fibrous polypus, or fibrinous polypus, I have never seen bleeding follow the operation of removal. After the numerous operations for polypi which I have performed, including those of the sixty-six cases referred to in this paper, I have not once seen an alarming hæmorrhage, and I make it a rule not to plug the vagina after the operation, or do anything to restrain, except keeping the patient in the horizontal position. But I have seen a few times—certainly not five—an amount of bleeding which rendered hæmostatic measures expedient. In all of them, the bleeding began at the time of the operation, except in one case of fibrous polypus, where it was delayed till a few hours after the operation. In a case of mucous polypus where bleeding occurred, the pulsation of an artery in the stalk could be easily felt, and the large vessel was subsequently seen in the removed portion of the pedicle. In all of the cases a very gentle plugging of the vagina was sufficient to arrest the hæmorrhage.

Fear of hæmorrhage after the operation, and anticipated difficulty in severing the pedicle, have been for a long time, and to a great extent still are, bugbears of gynæcologists, and have led to considerable sacrifice of life from their inducing operators to resort to bad methods. I lately removed a large true fibrous polypus in the

Royal Infirmary from a patient who, immediately after the operation, insisted upon returning home to a great distance by railway, and who never had any further trouble or confinement from the disease. This simple operation was witnessed by a stranger, who had recently seen a similar operation in a large hospital done by aid of Gooch's canula. The woman was a fortnight in bed, and at one time her life was considered to be in danger. The contrast of the results of these cases is not only fair, but might be made infinitely more striking by taking, instead of the second case, one of the numerous cases where strangling the neck of the polypus has proved fatal to the woman. A great variety of instruments has been invented for the purpose. I recommend the disuse of them all. The procedure is slow and clumsy, and should be rejected on these accounts, even were there no danger to life from the sloughing and other processes consequent on the strangulation of the pedicle.

It is scarcely necessary to say anything of the palliative treatment of hæmorrhage in a case of polypus, for this is a temporizing which, under any combination of circumstances, can scarcely ever be required. Such palliative treatment I shall dismiss with a very few words; for it is the same as is adopted in menorrhagia, and it is equally efficient,—a statement which, however ironical, is yet true. He would be a bold physician who would dare in any case to predict that any palliative would have the desired effect. The mere number and variety of such hemostatic remedies, recommended as they are in menorrhagia, and in the bleedings of fibrous tumours, is to the thoughtful physician good presumptive evidence that they are all pretty inefficient. Practitioners delight in them, and in changing from one to another. The patients are probably at least as credulous as the physicians, and are comforted.

I have never used in a case of polypus the local application of solution of perchloride of iron. But this, if required, would probably be as efficient as in the ordinary alarming bleeding from a fibroid.

ARTICLE II.—*Carbolic Acid, from a Septic Point of View.* By J. MILNER FOTHERGILL, M.D., Leeds.

THIS essay is perhaps essentially speculative; and yet it will be found to group a series of known facts in a relationship hitherto unrecognised, and has a distinctly practical bearing. It assumes that, as a matter of fact, the success of Lister's antiseptic treatment is unquestionable in the hands of any one who has tried it with the intention and capacity to test it fairly. It has not yet fulfilled all expectations, but still many limbs are now conserved, with such intention from the first, where previous to the introduction of this treatment amputation would never have been questioned even. In operations necessitating the laying open of joints, in severe compound smashes, in resection of joints, and to a very considerable extent in amputations, the effect of antiseptic treatment has been so marked as to leave no doubt that the results were something more than mere coincidences. Admitting that, in many instances, results have not been much different from what they have been under the old treatment, what we have to do is to see what light these failures throw on the much more numerous cases where a success which could not have been dreamt of even before has been attained. The conditions to be complied with, in order to attain success, have never been underrated by Professor Lister himself; and the vigorous compliance with his instructions which he demands from experimenters, is only such as he can fairly demand in justice to himself. But there is one condition on which he insists as of vital importance, and that is the existence of germs. This, he insists, is a *sine qua non;* and some such belief is no doubt requisite, in order to prevail on operators to observe the practically important conditions requisite for success. But with all due respect to Professor Lister, there is no doubt that this dogma, planted across the threshold of the inquiry, has turned away many who would have otherwise been induced to try the treatment for themselves. It enabled the mind which felt inclined to support the negative to take up an objection to start with, which has never been satisfactorily disposed of. The germs are undemonstrated, and the full-grown organisms to which they belong are undiscovered; and even yet, in the multitude of cases of free suppuration lasting for months, to which germs have had free access, the germ-bearing organism is unknown to microscopists. In the firm conviction, then, that the germ theory has had an unfortunate influence over the growth of antiseptic treatment, the writer proposes to consider the whole question without reference to germs, and to substitute for germs what appears to him a more correct etiology. And it may be here stated, that the elaborate experiments of Professor Lister just prove as much in favour of minute organic particles floating about in the air, slowly oxidizing to their ultimate constituents, as they do in favour of germs. It would be a waste of time to go over, even in the most cursory manner, these experiments; as to those who have attentively watched the controversy it would be unnecessary, and to those who have not, any review possible here would be utterly insufficient to give any fair conception of them. The view of oxidizing particles is the one now held by many of the most attentive observers who are converted to the practice of antiseptic surgery, and yet cannot accept its primary dogma. But we must remember that there is something more in the question than the granting of some sepsis-producing external agents. Long before the days of antiseptics proper cases of compound smashes, chronic abscesses, etc., now and then did as well as ever any cases under antiseptics have done, but unfortunately they were very rare. And yet if the introduction of foreign agents is so very easy, and forms one of the greatest causes of anxiety with the antiseptic dresser, and is so certainly followed by disastrous consequences, how in the name of reason are these cases possibilities at all? The cases were very rare, but antiseptics have enabled us to produce them almost, but not quite, at will. And why not always? That is a question which lies far behind a great deal which we have yet to know! All that antiseptics enable us to do is to place a number of cases, which would have certainly gone to the bad without them, into as favourable a position as the rare case which does splendidly without an antiseptic whiff near it. This is all that can be claimed for antiseptics: and practically it is no slight matter. In considering how antiseptics achieve this very desirable result, we must admit that they must exercise an antiseptic influence either over the fluids of the body themselves, or over certain organic particles conveyed by the atmosphere—perhaps over both. The consideration of the first half will probably give us much enlightenment as to the action over the second half. The fluids of the body, and notably the blood, contain not merely organized material for histogenetic purposes, but, what is the important matter here, the products of histolysis gradually passing onward to water, carbonic acid, and urea. But manifold changes go on, and various substances are formed, as the starch and protagon principles pass through the different stages before they are thus again converted into simple bodies and excreted. What various forms are assumed by retrograde metamorphosis of muscular fibre, are only known to the physiological chemist. Certain it is that, while the blood contains the future nutriment of the tissues, it also holds this waste; it is a vast system of sewage in this respect. This is well known to those who furnish us with our animal food, and a needful amount of hungering has been found indispensable to the "keeping" of meat after slaughter. When an animal has been over-driven, even the ordinary amount of hungering often fails, because an extra amount of waste has been created. Hares that have been coursed are soon high; and bullbaiting arose from an economical view of rendering bulls eatable. Venison from deer that have been hunted is also an unsafe article of diet, unless quickly consumed. This may apparently have very little to do with antiseptic surgery, and yet it bears directly on the question of the difference between primary and secondary amputations. The overfed London drayman is notoriously a bad subject for operations, and even trivial wounds are followed in him by very serious consequences; and this can only be attributed to the condition of blood, to its being laden with effete material which is in excess, as the respired oxygen is consumed by the alcohol and other combustible material in which his blood abounds. On the other hand, those cases of smashes which have done so well under ordinary simple dressing, have been either spare and by no means overfed countrymen, or soldiers on the rations of a campaign. In these cases there has been a minimum of waste and a maximum of oxidation. So in the perfectly trained prize-fighter of past days, his bruises were well again directly. What, then, we attain by antiseptics is the placing of our ordinary less favourable cases in the same rank as these exceptionally favourable cases just given. A great deal of the benefit of antiseptic treatment lies under this heading, but not all of it; and more especially those cases treated in the more or less polluted atmosphere of palatial hospitals. External agents do unquestionably, in hospitals, interfere to prevent cases put under favourable circumstances for recovery from direct and primary union. Whether this is a germ or an oxidizing particle, a minute molecule of matter from some other organism on its road to resolution to its ultimate constituents, is practically of little moment if it did not bear on the first consideration. That there is no evidence in favour of germs, which is not equally potent in favour of the oxidizing molecules, I may re-assert, while the whole history of organic investigation is in favour of the latter. This little active ferment, then, comes in contact with the fluids exposed by wounds, and excites in them the same atomic activity which is going on in itself. This is borne out not only by the analogy of fermentation, but by the facts of common life. The farmer mixes his straw with less stable organic compounds undergoing retrograde metamorphosis, and amid the atomic activity the straw itself is "rotted." "In the process of decay, it has been likewise observed, a substance undergoing this state of elementary transposition exercises a remarkable influence upon the particles of an adjacent substance, which, *per se*, would not be capable of passing into the same state of change, decay, or transposition. Many substances, when in contact with another in the state of decay, manifest, at common temperatures, an affinity for oxygen; that is, they enter into combination with this element at this low temperature, whilst under other circumstances such a combination can only be effected by a far higher degree of heat. The state of active absorption of oxygen, the combustion of the decaying substance, is transmitted to the particles of other substances in contact with it: they assume its characteristic state of activity: they behave as if they formed part of the decaying body, and their combination with oxygen is effected in a manner not further explicable just as it is by heat."—*Liebig*. Thus we see that not only is atomic activity communicable to substances naturally inclined to unite with oxygen at common temperature, but even to those not so inclined. We can readily see, then, how exposure to the atmosphere causes the fluids of the body to at once assume a chemical activity—a putrefactive change, indeed. A compound fracture in an hospital with a tainted atmosphere—a chronic abscess opened and so exposed, almost invariably put on active suppuration,—a condition, as we shall see, closely allied with the presence of a chemical oxidizing tissue-irritant. A surface of unprotected tissues, necessarily injured in their molecular integrity by the force which has separated them from the parts removed from contact, is exposed to the contact of these minute molecules in active chemical change. A rise of temperature follows, falling again on the induction of free suppuration: this is the history of exposure to the atmosphere without a chemical protection, and that suppuration removes all hope of primary union. Tissue and fluids are at once exposed immediately, and no longer mediately, to the atmosphere: chemical change is at once facilitated in substances undergoing decay already, if minute chemical irritants are introduced to substances not in an active atomic movement. To attempt to classify each case after exposure would be simply absurd in a tentative essay like this. Even how far the ordinary atomic change is accelerated by contact with particles themselves in great atomic activity, can as yet only be a subject of speculation.

Certain it is, that these chemically active bodies act as tissue-irritants, and free suppuration is a conservative action, washing the tissues and removing the external irritant. Thus the more powerful the irritant, the more suppuration is set up to remove it. That the chemical irritant sets up chemical changes in the outer layer of pus is fully evidenced to the nose in a badly-dressed wound. But a fresh layer of pus-cells is being quickly formed beneath, and thus the tissues are saved from contact with the chemical irritant. Suppuration is not an unalloyed evil, as some modern writing would do more than hint. Pus-cells are merely nature's dressing, clumsy and terribly expensive. Pus in itself is harmless, is but an imperfect epidermal cell, and is not endowed with vitality, and as such is a ready prey to chemical agents. The formed material which constitutes the wall of the pus-cell is a famous ground for some oxidizing particle to transfer its own atomic activity. Pus, then, is not only very expensive dressing, but it is very imperfect, and very liable to putrefy at an early stage. So surgeons have come to think that the less pus the better—which simply means, that the less pus the more perfect their dressings have been, and thus less necessity for nature to use her dressing. Thus the amount of suppuration has been generally accepted as a valid test of the efficiency of surgical dressing. The presence of pus, too, is incompatible with primary union; and the appearance of pus at once announces that all hope of that must be given up.

Thus we see that tissues are self-protecting against these chemical irritants, whether of extrinsic or intrinsic origin, but at such a cost as is too frequently simply ruinous. The drain is exhausting; and free suppuration is a serious matter in itself. Pus is not only useful as against minute tissue-irritants, but if any doubt as to its use for such purpose existed, it would be removed by the suppuration round a foreign body or sequestrum. What surgeon of even limited experience has not had more than one opportunity of seeing a freely discharging sinus close and heal over in a few hours after the removal of the last speck of dead bone? Sheathing the tissues from the touch of this material irritant, with the removal of the cause goes the pus-producing activity of the tissues.

These oxidizing molecules of organic matter are not visible to the microscopist, it is true. But, nevertheless, their presence can be proved. Smell consists of the contact of the odorous particle with the Schneiderian membrane, and the oxidation of it gives the impression on the nerve; mere contact of a particle in chemical quiescence will not give it. But not all substances so oxidizing give the impression of smell; nor are odorous particles necessarily of a septic nature. But we all know how intimately a bad smell and putrefaction of animal products are associated. The use of antiseptics soon stops the smell. Do they also stop the atomic activity on which it depends, and with which it is allied? Again I must invoke the aid of the great master of chemistry. "There are indeed many, many bodies which oppose putrefaction and fermentation, and which impede or arrest the course of these processes; and this remarkable action frequently depends on their forming a chemical compound with the ferment. By the addition of a body having affinity to the ferment, the tendency of its particles to retain their original arrangement is obviously strengthened; for, in addition to the force which holds them in groups, we have, in the new body which combines with the ferment, a new attraction, which must be overcome before the atoms of groups of the ferment can change their position. To the list of bodies which check putrefaction and fermentation, or antiseptics, belong all substances which exert a chemical action on ferments; such as alkalies, mineral acids, concentrated vegetable acids, volatile oils, alcohol, sea salt."—*Liebig*. Thus, when we use an antiseptic to arrest a disagreeable smell, we see that it does so by arresting the chemical activity on which the smell depended. Thus the majority of antiseptics belong to this class. But Condy's fluid achieves the same end in an entirely different manner. Containing as it does ozonic oxygen in huge quantities, its contact with a putrefying body at once completes the oxidation. It is thus one of the best antiseptics, and for purifying the air of a room the antiseptic *par excellence*. But this is not the action desirable for the treatment of wounds where the atomic activity is objectionable; the chemical activity is soon over, or the Condy's fluid has gone. Now, in the treatment of wounds, what is wanted is a powerful antiseptic which can be retained in the neighbourhood of the wound without losing its virtue, and shall be itself as little an irritant to the tissues as is possible. These various properties have so far been found best combined in carbolic acid. Other antiseptics, and especially mineral acids and haloid salts, have been tried, but have been given up; and when antiseptic surgery is mentioned, carbolic acid, in its many preparations and vehicles, is almost certainly inferred. The virtues of tar in preventing decomposition, and its application to festering wounds in cattle, is an old part of farriery. The extraction of a principle from it, and its application to human sufferers, is a comparatively new use. But this antiseptic is a chemical irritant of itself, and of no slight potency either. Thus it has failed most markedly in cases apparently the most favourable; in others, under the most unfavourable circumstances possible, a capital result has been attained. Speaking generally, it may be made a matter of question whether secondary amputations have been so much benefited by it as primary ones certainly have. And this, too, depends rather on the condition of the patient than any possible variation in the surrounding atmosphere. The waste-laden blood in a primary amputation needs an antiseptic more than the comparatively purer blood of the invalid being prepared for operation. The chemical agent, too, is less an irritant when there is putrefying or oxidizing material to unite with it. Thus the more effete material or oxidizing matter in contact with the antiseptic, the more completely is the antiseptic neutralized; the less the oxidizing matter, the more free antiseptic is left to act as a chemical tissue-irritant itself. This is a view of the question which cannot be overlooked in looking at the failures. Thus, my esteemed friend, Mr Samuel Hey, thought he would give carbolic acid a fair trial, and honestly put it under apparently the most favourable circumstances; so he chose a secondary Syme's operation, and did all with the greatest care. The case did very badly; it obstinately declined to make any reparative effort; it remained wet and sloppy; the flap slipped off the bone, and the antiseptic treatment was given up, and the limb strapped up non-antiseptically, and did then very nicely. Now, it strikes me that it is more than possible that Mr Hey's extreme desire to try a nice case with it in order to give it as fair a trial as possible, just defeated the very end that he had in view. A case of that kind was just the very one to do well without antiseptics, and was therefore the very last case for it. The absence of oxidizing agents left the antiseptic free to act as a tissue-irritant itself. The extraordinary cases of smashes which have recovered without a bad symptom, after being treated antiseptically, can be fairly set against cases like the above narrated one, in more senses than one. The positive evidence of the efficiency in these cases tells us most unmistakably that there is something in the failure of the other cases which has not yet come out. What we do most seriously want to know is, how to discriminate betwixt the cases where antiseptics will avail us, and the cases which will do well without, and, *ergo*, not so well with, antiseptics.

It is admitted even by Mr Jessop, who has tried antiseptic surgery as honestly as any one, that rectangular-flap amputations are not much benefited by antiseptics: in fact, the disturbing the limb to dress it counterbalances the advantages quite, if not something more. In these cases, the opening is made so as to be dependent, consequently the effused fluids have a tendency to fall away by their own gravity from the tissues, and thus old putrefying fluid was avoided, and with it the sepsis-communicating tendency wh
affecting the fluids nearest the tissues, set up suppuration.
principle of dependent openings was recognised by Teale

eally before antiseptic surgery had demonstrated one great cause at least why this modification should have been so successful in practice.

We find, then, that the advantages which practically arise from the use of antiseptics may be divisible into two headings:—

1. Cases where the presence of an antiseptic uniting with the effete products of the blood exposed to oxygen prevents suppuration.

2. Cases where the advantage may fairly be attributed to the destruction of septic material air-borne to the wound.

Practically these two must be so mixed up as to be in many cases inseparable.

We will consider first the cases which may be referred to heading 1. Thus we find severe destruction of tissue, which can only be removed by a process of sloughing of the partly-killed tissue, with a large effusion of fluids brought into immediate contact with the air, and which ordinarily would suppurate, and that, too, most freely. Now, here there can be no need to suppose, or rather presuppose, the existence of germs, for in the purest atmosphere, without antiseptics, nearly every case would suppurate freely at the least. And yet nothing is more common in the history of antiseptics than for this kind of case to do very well, and often to heal by first intention. But the careful exclusion of air at all leaves the question completely undecided, whether this is due to the exclusion of what the air bore with it, or to the exclusion of air as air containing oxygen. Now the experiments of Lister proved abundantly that a solution of organic matter, boiled and exposed to pure air alone, would not putrefy; but what they do not prove is, that a solution containing normally substances uniting with oxygen would not putrefy in pure air from the ready contact thus afforded for oxidation, and that that condition of chemical activity could not be communicated in the manner that Liebig has described. This is a question which it would be difficult to see even how to settle by experiment, or even what experiment would settle it. What is the effect of maintaining stumps in an atmosphere of pure air? Maisonneuve has told us the effect of keeping them in a vacuum. It was an improvement on the French method of treating wounds, but was very difficult of application, so as to maintain a vacuum efficiently. But the converse experiment would be more crucial. It is evident that if Maisonneuve excluded air, he must necessarily have excluded what the air bore with it. The question of how far the advantages of antiseptic surgery are really referable to the prevention of increased oxidation in the exposed fluids and tissues, due to their immediate exposure to the oxygen of the atmosphere, and how far to the extrusion of foreign agents exciting putrefactive changes, is to me at least unsettled—very unsettled. Cases there have been of bruises without solution of continuity of integument where all has passed into one abscess of putrefying pus. When could any germs or other septic agent have found their way in here? The lowered vitality of the bruised parts was unequal to holding the atomic combinations together in the presence of the oxygen of the effused blood. These cases throw some light on the other questions. For, as to life, considered chemically, it is that innate power in organisms to resist oxidation—except as regards waste. Plants that know not waste, and are entirely constructive, know no oxidizing process, in life at least. But animal life owes its energies to the destruction of its elaborate tissue. Every movement entails molecular destruction. The chemical action thus liberated is converted into the acting force required. Animal organisms have thus only oxidation before their tissues; it is a mere question of time and amount. Lacerated wounds and smashes suppurate as freely in the purest air of heaven as in the most ill-ventilated hospitals, unless protected by human art. Still, wounds, as a rule, do much worse in palatial hospitals than in pure country air, as the late Sir James Simpson showed. Granting all that can be said in favour of the cases under heading 1, we must admit the action of external agents in the second division.

2. Cases where the advantages may fairly be attributed to the destruction of septic material air-borne to the wound.

This heading comprises the ordinary amputations of an hospital, and especially the secondary amputations. Thus, in cases of excision of mammary gland, excision of joints, etc., primary adhesion and union have frequently been secured in the most unfavourable hospitals. We know, too, that this is due to the exclusion of extrinsic agents at the time of operation, as well as to the securing of the fluids from too free oxidation. Cases have occurred too frequently where a palpable defeat in the antiseptic protector has altered the result entirely.

Suppuration once excited in some systems is very uncontrollable, and no application of antiseptics afterwards will materially modify the cell-proliferation induced. This is due, unquestionably, to a weakness and irritability of the tissues of the organism. Incapable, after injury, of direct repair by primary adhesion, repair by the more slowly-moving process of rapid manufacture of incomplete cells seems the only process of which they are capable, whether antiseptics, as arresting the formation of tissue-irritants, are used or not. But on this subject it is well to be guarded; little is known, and any strong assertion would be hazardous.

But in the wards of an hospital, with minute particles of matter floating in the air, the advantage of antiseptic dressing is soon seen; slight unprotected contact may excite a process of atomic activity, which after care may be unequal to arrest. An obstinate process of putrefaction and suppuration may be induced by a short exposure. The condition of the air in hospitals was made a strong point by Sir James Simpson in his argument against palatial hospitals. The great tendency for wounds then to go wrong, and for the patient to die of after-consequences, he showed, more than counterbalanced the obvious advantages of skilled operators and scientific appliar
His arguments on the spread of surgical fever and pyæmia fror

ward to another go far to settle the question that the *materies morbi* to be excluded by antiseptics are germs of foreign organisms and septic particles floated from one human organism to another. We want more proof of the capacity of lowly forms of life in an embryonic condition to excite active chemical changes. Antiseptics destroy them; true, because their vitality is too low to protect them from powerful chemical agents; the antiseptic forms combinations chemically with their constituents, which they are unable to arrest, as more highly vitalized organisms can and do.

On this point, too, we want evidence as to whether the septic material may not find its way to the wound by other means than contact. Mr Horsfall tells me of three cases which occurred when he was house-surgeon to St Bartholomew's, which tend somewhat to throw doubt on the fact that mere contact is the one and only thing to guard against. The three cases were reported by Holmes Coote, and were these:—Three amputations were performed simultaneously, and put in a row next to a case of extravasation of urine. The nearest went pyæmic, and had hospital gangrene at once, and died. The middle one's stump looked suspicious. The furthest one was apparently unaffected. They were removed into another ward. The middle one got much worse, but recovered; the one furthest away showed hospital gangrene, but it never amounted to much. Now, though contact through the dressings was theoretically possible, still there is room for grave suspicion that the view of the absorption of septic material by the lungs, and its manifesting itself at the wound, was not ill-founded. It is quite consonant with our experience, that a poison taken in by the respired air should manifest itself in the weakest spot of the organism, and notably at any new injury, whether of surgeon's act or not. The weakest points always go soonest, and the new tissue of a cicatrix melts away in hospital gangrene quite differently to the more vitalized old tissues beyond. The effect of a chemical agent on the new tissue is apparent at once, and demonstrates how readily imperfect tissue yields to chemical agency. The pus of wounds when healthy, the laudable pus of our forefathers, is readily changed by any chemical agent which produces decomposition of its molecules, and the evolution of chemical tissue-irritants provoking suppuration in their turn.

But still the question of whether the advantages of antiseptic surgery lie in the prevention of rapid oxidation—*i.e.*, putrefaction of the fluids, etc., exposed to air—or in the destruction of foreign agents exciting atomic activity in the previously quiescent fluids, must be regarded as decidedly *sub judice*.

Behind the question of the introduction of septic particles lies another very important question, which the future of science may perhaps some day be able to answer, viz., Are there different conditions of activity in the history of these septic particles? And again, Have different septic particles a different amount of atomic activity, and the power of communicating it? There seems every probability in favour of an affirmative answer to this question at no far distant period. The ordinary dust of rooms does not seem to be very potent for mischief; but we know that, in a pyæmic ward, or one infected with hospital gangrene, there are particles of fearful activity, if judged by their results. So, too, in hospitals, merely as such, without the presence of either of these scourges, the air is tainted, as the nose can judge; and wounds, speaking generally, have at least a tendency to suppurate. As the history of hospital gangrene well illustrates, nothing will so soon excite a particular molecular change as a particle in atomic activity from another organism undergoing that change itself. The poison of smallpox, of scarlatina, or of other infectious diseases, possesses not only the power of communicating its own atomic activity, as atomic activity, and producing increased tissue-change and heightened temperature, but of absolutely determining it in the direction of the reproduction of particles identical with itself, and capable of exciting a similar series of changes in its turn. Thus, smallpox does not become scarlatina, nor scarlatina become smallpox. Whether ordinary septic particles from suppurating wounds have ebbs and flows of activity in the various forms which must be assumed by an organic particle on its road to decomposition according to the amount of oxidation; or a regular process goes from circumference to centre,—is a question on which we can as yet merely speculate. It is very obvious, however, that an atmosphere laden with particles wafted from other organisms must of necessity require antiseptic surgery rather than the air of country districts. But if such antiseptic surgery will give us all the advantages of palatial hospitals situated in large centres both of population and surgical talent, and relieve us from the drawbacks hitherto inseparable from this aggregation—and where it has been thoroughly tried it has succeeded wonderfully, considering how recent is our knowledge on the subject (and what promise lies in the future with a better knowledge!)—it is a discovery the value of which it is difficult to estimate.

A number of opponents, even to making trial of the system, point out cases of unquestionable failure; but they beg the question in stating that the failure lies necessarily in the principle. If these failures were investigated thoroughly, the great majority at least would be found to originate in just the same manner as failures occur now and then in the hands of the most expert converts, namely, to oversight or want of care in the dressing. And even if some of them are apparently inexplicable on any other ground than inefficiency in the agent used, the objectors must remember that there lies before them a history of unquestionable success, which they, in their turn, can be asked to explain satisfactorily. We are not already, and at this early stage of the inquiry, entitled to assume that we have reached the ultimate knowledge possible in antiseptic surgery, we know we have much yet to learn; and if we are to judge what we do not know by what we do know—and there is no other rule—it seems probable that, with an increasing knowledge, we may be able to ensure increasing success; as a decided success has already followed our imperfect knowledge.

What cases are best suited to antiseptic treatment? What cases may be trusted to do without it? What cases will do best with very little antiseptic, *i.e.*, highly diluted, solutions? What cases will need strong solutions?—are all questions with which both the advocates and the objectors must grapple before anything really scientific, and thus intrinsically conveying success, can be attained. So far, the most startling cases, as compared to ante-antiseptic surgery, are the lacerated wounds and compound fractures where large portions of tissues and quantities of fluids are suddenly exposed to the atmosphere. The cases least benefited are the secondary operations, where the air of the ward merely was to be guarded against by dressings.

Whether there is a condition of tissue-irritability, which is incapable of repair by any other mode than suppuration and granulations, whatever treatment be adopted or not, cannot be answered.

The preparation of a patient for operation, the modification of "training," which was thought of so much more importance by our forefathers than by their surgical successors of this day, bears, too, directly on the question of antiseptics. When this is carried out, and thus the system put into the most favourable condition which it, as a system, is capable of assuming, the necessity is much lessened and reduced for resort to antiseptic treatment in its entirety at least. The sudden accident coming on the system unprepared, and in a sense unpurified, will always contrast the antiseptic treatment most favourably with other methods; and large segregational hospitals furnish the best comparative results with it.

Finally, there is as much evidence in favour of the value of antiseptic surgery in arresting the putrefaction of the fluids and tissues of the body suddenly exposed to the air, with their vitality lowered by the injury which exposed them, as in favour of its value depending on its action over extrinsic causes of putrefaction from without. That, in the large majority of cases, these actions are combined and inseparable, may be accepted as proved.

But, in taking leave of this interesting subject, I must ask the forgiveness both of the Editor and the readers (if any ever get so far) for being so much more diffuse than originally intended. The subject is one in which every thinker must be deeply interested; and the experiments conducted by Mr Jessop in Leeds were watched with an almost hostile criticism, so as to be fairly tested. These experiments Mr Jessop kindly allowed the writer full opportunity of examining; and, in addition, a second personal visit to Edinburgh, when Professor Lister's absence was well supposited by Dr Joseph Bell, have perhaps led the writer to regard the subject with a partial interest; and yet the absence of personal interest in the results better qualifies him as a dispassionate observer.

The conclusions arrived at were these :—

1. The success in the majority of cases is most unquestionable; when fairly and thoroughly tested.
2. The failures are in some cases referable to known causes; in some cases not so referable.
3. Will further investigation elucidate these unaccountable causes?
4. What cases are best suited to antiseptic treatment?
5. What cases are not so specially adapted?
6. Is the efficacy due to intrinsic action, or arrest of putrefaction in the body itself?
7. Or is it due solely or mainly to extrusion of extrinsic causes?
8. Are there cases of tissue-irritability which would suppurate under any circumstances?
9. In what cases is the antiseptic rather an irritant itself?
10. When are weak and when are strong solutions best suited?
11. Are the extrinsic causes germs (embryonic forms) or septic particles?
12. Is this power to excite and communicate their atomic activity variable during their history, or in their nature and essence? And if more is known of this atomic activity, is it likely that means will be found by which antiseptics will more thoroughly arrest it?

ARTICLE III.—*Criminal Lunacy in Scotland for Quarter of a Century, viz., from 1846 to 1870, both inclusive.* By J. BRUCE THOMSON, L.R.C.S. Edin.; Resident Surgeon, General Prison for Scotland, at Perth.

QUARTER of a century's experience of criminal lunacy in Scotland is now before us, and ought to afford some valuable statistics and practical lessons on a subject of paramount interest. The number, nature, and treatment of this class of prisoners, or rather prisoner-patients, called criminal lunatics, involve questions most grave and puzzling to psychologists, medical jurists, and the legislature. "Justitia præcipit parcere omnibus, consulere generi hominum."—*Cicero de Republ.*

The history of the lunatic department of the General Prison of Scotland, established in 1846, amply proves the necessity for such an hospital or asylum for insane criminals, and testifies to the intelligent foresight of the General Board of Directors of Prisons who inaugurated it. A very slight consideration will satisfy any one that there are various classes of insane criminals unfit to be placed in ordinary asylums, and can only be disposed of safely and satisfactorily by the State. There is a homicidal class, a salient feature of whose insanity is its *transitory* character. The impulse to homicide seizes the patient suddenly, and as suddenly passes away. Of this class several have been confined for life in the lunatic department of t

General Prison. One patient killed three persons in one night, and for years he remains quite sane; but repeatedly has said, "Get strong men to watch me or I must kill some of them." Another committed a double murder. Where can you place those belonging to this category, in order to safe custody, but in a prison asylum?

There is another class of much significance, and by no means few in number—dipsomaniacs who have committed murder. These are regarded as insane drinkers, urged by an irresistible propensity to this indulgence. They recover complete sanity, almost momentarily, after the violent act of murder. One has been confined for thirteen years, another for ten, and another for six years, without exhibiting any aberration of mind. Although so long sane, are such dipsomaniacs fit, under any circumstances, to be at large? The present Lunacy Acts do not permit sane persons to be detained in common asylums; therefore for safety to the public they are committed in custody to a prison asylum, because they are only safe and sane under confinement.

There is a third class, who have destroyed their own children under an attack of puerperal mania. These unfortunates, like the two former classes, are confined during Her Majesty's pleasure; and the doctrine hitherto acted upon is, that these should not be liberated until they have passed the age of childbearing.

A fourth class belong to those who in an insane state have committed outrages upon society by gross indecency and obscenity. Such, of course, must be excluded from ordinary asylums for the insane, and could only be received into a prison.

In addition to these classes, it has been found necessary to make provision for certain criminals becoming insane while undergoing their sentences in the penal department of the General Prison, and also local prisons. And it is ascertained that the liability of the criminal classes to an excess of insanity is very great, and much beyond that of the free population of the country.

Accordingly, the necessity for setting apart a ward of the General Prison of Scotland for the safe custody and treatment of criminal lunatics, was pressed very strongly upon the attention of the Directors; and in the year 1846, by a public grant, there was instituted the lunatic department. All the lunatics till then in prisons and asylums were collected and transferred to this department, in terms of Acts 2 and 3 Vict. c. 42, and 7 and 8 Vict. c. 34.

Here let us show,—*Who are held to be our criminal lunatics.*

In Scotland this term is applied to three classes of offenders, viz.:—

1. Prisoners found insane in bar of trial.
2. Prisoners tried and found insane at date of offence.
3. Prisoners who have become insane while undergoing their sentences in prisons.

Referring to classes 1 and 2, the term *criminal* lunatic seems a misnomer. Class 1 had no trial, and there is no proof of responsibility for the offence charged. Class 2, because of the plea of insanity at the date of offence having been accepted, is also held irresponsible; so that these two classes cannot properly be called, but for want of a better name, *criminal* lunatics. Class 3, having been tried and convicted of a criminal charge, may be properly enough called criminal lunatics or lunatic criminals.

The term *state lunatics* may be suggested as a fit and proper term for the 1st and 2d classes; inasmuch as, having committed grave and heinous crimes dangerous to the public, they are placed at Her Majesty's disposal, under the care of the State.

Table of Admissions to the Lunatic Department of the General Prison for Scotland, during 25 years, viz., 1846–1870, both years included.

Years.	Criminal Lunatics.		Totals.	Years.	Criminal Lunatics.		Totals.
	Males.	Females.			Males.	Females.	
1846	7	3	10	1860	5	3	8
1847	13	5	18	1861	1	4	5
1848	9	2	11	1862	5	0	5
1849	9	2	11	1863	2	2	4
1850	8	2	10	1864	7	1	8
1851	8	3	11	1865	11	4	15
1852	6	4	10	1866	8	0	8
1853	2	1	3	1867	5	6	11
1854	3	0	3	1868	7	4	11
1855	5	1	6	1869	4	3	7
1856	2	3	5	1870	4	5	9
1857	4	5	9				
1858	7	3	10		149	73	222
1859	7	7	14				

The foregoing table shows a gradual increase in the number of admissions; perhaps only *au courant* with the increase of the population of Scotland. My last annual report, just published, gives the particulars of all confined in this department during 1870, viz., 38 males and 20 females—total 58. In the same report is set forth a table of admissions during the last decennial period, giving the numbers sent from the General Prison and from other prisons or asylums:—

From the General Prison, - -	58
From other Prisons or Asylums, - -	35
Total,	93

The latter class comprehends chiefly all placed at Her Majesty's disposal—found insane in bar of trial or at the time of committing the offence, generally murder or offences of a violent, dangerous, or indecent nature.

But the table of admissions is chiefly remarkable for the small number of females compared with males; and this is a uniform feature of the history of criminal lunacy in Scotland. The males number 149, being double the number of females—73. Here is a problem for psychologists. Why is it that criminal lunatics show such a wide disproportion of the sexes? In England it is not so. In Bethlehem Hospital, during thirty-eight years, I find there was a preponderance of females, viz.:—Males, 3511; females, 5407.

The reports of the Lunacy Commissioners for Scotland give a greater proportion of females than males becoming insane; and the number of male and female criminals not insane does not differ very much, although the males do rather preponderate.

It may be suggested that murders and violent crimes, such as have been charged against criminal lunatics, are by no means so likely to be committed by the weaker as by the stronger sex; and the following table supports this view. Out of 74 criminal lunatics who have committed murder or attempted to do so by violence, I find a very small proportion are females. Thus:—

Committed murder, males,	32
Do. females,	14
Attempted to commit murder, males,	26
Do. do. females,	2
Total males who committed or attempted murder,	58
Do. females do. do.	16

In the famous *Philosophical Dictionary* this suggestion is confirmed:—"Leading a more sedentary life, women possess more gentleness of character than men, and are addicted much less to the commission of enormous crimes,—a fact so undeniable, that in all civilized countries there are always fifty men at least executed for one woman." Why, in England, the females should be greater in the Bethlehem Asylum for criminals, is explained by the fact, that persons who have committed petty crimes are included among the criminal lunatics, which was notably the case till lately at Broadmoor.

Table of Ages of 222 Criminal Lunatics.

Years.	Males.	Females.	Total.
10 and under,	29	10	39
20 " 30,	55	30	85
30 " 40,	34	22	56
40 " 50,	20	8	28
50 " 60,	9	3	12
60 " 70,	2	0	2
	149	73	222

The foregoing table shows the maximum liability to criminal insanity in both sexes to be from twenty to thirty years of age, which agrees with 5122 cases examined into by Dr Thudicum. The Hanwell statistics make the critical periods from thirty to forty. The experience of Esquirol led him to conclude that insanity in general increased progressively after mature age. I may observe that the above ages of the criminal lunatics are the ages of committal; but it is impossible to say how nearly the figures indicate the first onset of the malady.

The offences charged against these 222 criminal lunatics were as follow:—

Theft,	102
Murder,	46
Assaults, etc.,	28
Robbery,	8
Stabbing, etc.,	7
Assault with intent to ravish,	8
Wilful fire-raising,	3
Bigamy,	3
Breach of trust,	3
Concealment of pregnancy,	2
Malicious mischief,	2
Forgery,	2
Falsehood, fraud, etc.,	2
Uttering base coin,	1
Rape,	1
Horse-stealing,	2
Felony,	1
Libidinous practices, etc.,	1

The cases of murder, violence, and indecency, have been almost all persons found insane in bar of trial or at time of offence. The cases of theft, etc., are chiefly criminals who became insane while in prisons undergoing their sentences.

The forms of insanity, so far as known, were:—

Mania, chronic,	85
„ homicidal,	37
„ acute,	15
„ epileptic,	7
„ puerperal,	6
„ melancholia,	2
„ hysterical,	1
Dementia,	49
Imbecility,	7
Idiocy,	4
Feigned (?),	8

The counties to which criminal lunatics belonged were:—

Aberdeen,	10	Kinross,	0
Argyll,	13	Kirkcudbright,	1
Ayr,	8	Lanark,	55
Banff,	1	Linlithgow,	2
Berwick,	0	Nairn,	0
Bute,	0	Orkney,	0
Caithness,	2	Peebles,	0
Clackmannan,	1	Perth,	12
Dumbarton,	1	Renfrew,	7
Dumfries,	2	Ross and Cromarty,	1
Edinburgh,	36	Roxburgh,	6
Elgin,	0	Selkirk,	1
Fife,	11	Stirling,	18
Forfar,	17	Sutherland,	1
Haddington,	0	Wigtown,	3
Inverness,	7	Zetland,	4
Kincardine,	1		

The following are the occupations of 100 criminal lunatics:—

Males.—9 labourers, 5 miners, 4 masons, 3 carters, 3 fishermen, 3 seamen, 2 mill-workers, 2 tramps, 2 joiners, 2 shoemakers, 2 weavers, 2 painters, 2 bakers, 1 domestic servant, 1 gardener, 1 shepherd, 1 hawker, 1 draughtsman, 1 coachman, 1 flesher, 1 tinker, 1 chimney-sweeper, 1 photographer, 1 watchman, 1 wood merchant, 1 fishing-tackle maker, 1 blacksmith, 1 butler, 1 bellhanger, 1 shipbroker, 1 inspector of poor, 1 surgeon, 1 polisher, 1 potter, 1 dyer.

Females.—7 domestic servants, 6 mill-workers, 6 housewives, 6 housekeepers, 5 tramps, 2 seamstresses, 2 hawkers, 1 weaver, 1 shopwoman, 1 prostitute.

Of these same 100 we are enabled to give further particulars:—

Married or Single:—

Married,	16 males,	15 females,	31
Single,	47 „	22 „	69
			100

Complexion.—20 fair, 40 fresh, 14 sallow, 11 dark, 10 pale, 5 swarthy.

Colour of Hair.—24 black, 26 brown, 18 dark, 15 gray, 4 red, 3 auburn, 10 fair.

Colour of Eyes.—40 gray, 32 blue, 14 hazel, 8 brown, 6 black.

Education.—18 cannot read; 42 can read a little; 36 can read well; 31 cannot write; 48 can write a little; 17 can write well; 4 of superior education, and can read and write well.

Religion:—

40 belong to Church of Scotland.
25 „ Roman Catholic Church.
17 „ Free Church.
7 „ United Presbyterian Church.
5 „ Episcopal Church of England.

2 belong to Evangelical Union.
2 „ no religion.
1 „ Greek Church.
1 „ Methodist Church.

These statistics have carried us beyond the limits of our intended article, and we offer further only one or two conclusions from experience of the value and necessity of this lunatic department of the General Prison for Scotland:—

1*st*, Experience shows that such an institution for criminal lunatics has been of great public service, and cannot be dispensed with. A prison asylum is a place of secure custody for dangerous lunatics. At the very time the Board of Directors were making arrangements for such an institution, an insane criminal made his escape from Paisley Asylum; and it is quite clear that the freedom given to patients in ordinary asylums is opposed to the security necessary to be exercised in regard to dangerous criminals. Further, applications have, time after time, been made for the admission of convicts whose insanity is such that they might as well go to any asylum as this prison asylum; and such applications have been uniformly refused, on the ground that the criminal insane should not be associated with the ordinary insane. If common criminals are thus refused, *a fortiori*, violent and dangerous criminals would be refused.

The following case may be given in illustration:—

W. C. secreted a lethal weapon, and suddenly attacked and murdered an inmate of a lunatic asylum. The feeling of horror awakened in the minds of friends of patients was such that the tragedy threatened to injure the asylum, and the criminal lunatic was about to be thrown out upon the charge of his relatives. What could have been done in this case had there not been a refuge for this criminal lunatic in the General Prison? After some delay, he was brought to trial, and on a verdict, "Insane at the time of offence," before the High Court of Justiciary, he was ordered "to be placed in strict custody during Her Majesty's pleasure."

Besides, there are a class of homicidal men and women—such as dipsomaniacs and puerperal maniacs—who become sane, and continue so, but who are not regarded as safe to be at large. The law does not allow *sane* persons to remain in lunatic asylums; and the following case shows that a prison or state asylum is the only fit and proper place for such patients:—

J. W. stabbed a man fatally in the streets under a fit of dipsomania. Instead of being committed to the lunatic department of the General Prison, this criminal lunatic was allowed to be sent to a first-class lunatic asylum. As in cases of dipsomania, the homicide recovered his intellects almost immediately after the heinous act, and after a short time was liberated from the asylum. Not long after his liberation this person was again confined for an act of violence, and I believe is so now. This was almost the only instance in which the Directors of Prisons allowed one who was charged with murder to be sent to a common asylum.

2dly, During the experience of criminal lunacy in Scotland, it is proper to mention, increased care and attention have been given to all criminal lunatics; and the prison asylum has kept pace with the more humane and more intelligent treatment of this most unfortunate of all classes of the insane. At the same time, it must be satisfactory to the public as well as the profession to know, that the economy of the lunatic department for criminals so advantageously compares with the expenditure of the great "Broadmoor State Asylum" in England. In the 32d Report of Prisons in Scotland just published, the cost per head per annum of criminal lunatics in England and Scotland is set forth as follows:—

Broadmoor, 1869, ...	£64, 8s.
Estimated for Scotland, . . .	£25.

Comparing the system of treating the criminal insane in Scotland with that adopted in England and Ireland, we cannot but prefer our own views of who are to be considered our criminal lunatics. When we visited the great asylum for criminals at Broadmoor in 1864, we found there a number of patients whose crimes were not of a dangerous nature in a state of dementia or imbecility, such as in Scotland would not have been admitted to the lunatic department of the General Prison, but sent, after expiry of sentence, to a common asylum, or the lunatic ward of a parish poorhouse. Yet here were numbers under a Royal or Secretary of State's warrant likely to be detained for life. We believe a selection has since been made from these, so that only the violent and dangerous, as in Scotland, are held fit subjects for detention in the State Asylum at Broadmoor.

In Ireland, in that same year, when I revisited Dundrum, the whole of the criminal lunatics were not collected there, but many of them scattered over the country in ordinary lunatic asylums and in prisons, where they could be but ill cared for.

Compared, then, with England and Ireland, we consider that Scotland has been for many years better circumstanced; our criminal lunatics being only violent and dangerous persons, or such as have committed murder, or outraged public order and decency; while the lunatic department of the General Prison has all the comforts of an asylum, and insures the safe custody of those criminal lunatics who are unfit to be set at large.

In the 32d Report on Prisons in Scotland, already referred to, we have reference made to a new proposed legislation for certain classes of criminal lunatics confined in the lunatic department of the General Prison for Scotland. We give the words of the Report:—

"We may hope for some relief,[1] should a bill now in the hands of the Lord Advocate be passed during the present session. Among other provisions to remedy defects in the law relating to criminal and dangerous lunatics, it contains a clause for the conditional removal of inmates of the lunatic department in the General Prison. This clause would afford opportunity for putting such persons into the charge of relations or other persons prepared to look after them, but under certain precautionary conditions relating to supervision or otherwise, and with the final condition of liability to removal back to the lunatic department in the General Prison, if that should be found necessary."

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[1] The lunatic department being now crowded.

ARTICLE IV.—*On a Case of Trance.* By W. ALLAN JAMIESON, M.B., Berwick-on-Tweed.

THE exact nosological position of the following case is doubtful. It differs from true catalepsy inasmuch as there was an absence of plasticity in the limbs: thus the arms, though usually folded across the chest with the flexor muscles in a state of slight tonic contraction, on being removed from that situation and raised up, dropped when no longer supported unresistingly by her side; while the complexion was more highly tinted than in the waking state. It much more closely resembled somnambulism, the sleep being more profound than natural, though the imagination did not prompt to the performance of co-ordinate motor acts. That it was not feigned I am convinced, though some might call it a mere phase of hysteria, hysteric coma. From its indefiniteness I prefer the word trance, here used as expressing a morbid mental state lying on the borderland between somnambulism and catalepsy, in a person of hysterical constitution.

Catherine K., æt. 16, domestic servant, a well-grown pretty girl, with dark hair, full lips, and brown eyes, shaded by drooping lids, of active lively disposition, though wayward temper. Her appetite had been capricious of late, but otherwise she was in good health up to the evening of the 25th February 1871.

While in the passage leading up to her master's house shortly after six, she was struck a violent blow on the right cheek by a lad whom she had spoken sharply to for some rude conduct. Though the blow was painful and stunned her, it produced no other immediate effect, for she went down the street, delivered a message, and on her return did some household work. Shortly before seven she was found lying unconscious on the stair. She was removed to a sofa, cold water was dashed freely over her face, burnt feathers were applied to her nostrils, and sinapisms to her legs. These measures failing to rouse her, I was called in.

I found her lying as if asleep, breathing quietly, with a pulse of 90, regular, and of good strength. The right cheek, over the malar bone, and round the eye, was a little swollen; and on touching this she shrank as if it were painful. There was slight but constant quivering of both eyelids, which were closed; on opening them the conjunctiva was insensible to touch. The pupil was moderately dilated and reacted to light. By-and-by there were slight symmetrical clonic spasms of the legs and arms, which ceased when the mustard poultices were removed. No signs of consciousness being elicited by rough shaking or shouting, a pinch of snuff was gently blown up each nostril, but without causing any reflex action. I then threatened to bleed her, and after much preparation bared her arm, and drew a cold piece of iron across it, but there was not a trace of resistance. In deference to the wish of her relatives, a couple of leeches were put on the bruised part. The catamenia were said to be regular, though recurring every three weeks; and it was nearly that time since their last appearance. She had a similar attack after a fright two years ago, lasting three hours and a half, from which she awoke crying.

26th.—She awoke about 2 A.M., and again between 6 and 7, sat up for a short time while she arranged her dress and ate some biscuits, appearing quite rational, though complaining of pain in her limbs and heaviness in her head. The urinary secretion is normal, only containing a slight leucorrhœal deposit; it is passed during the waking intervals.

At half-past nine in the morning she was again in the state of trance, the pulse 90, temp. 98·6°. There was a peculiarity about her respiration: though always quiet, it presented a rhythmical arrangement; the inspirations gradually became fainter and fainter, till the cycle was closed about every five minutes by a deep sigh. During my visit she once called out, "There he comes again, but never mind," in probable allusion to the lad who struck her. She did not again become conscious till 5 P.M., and then only for a short time. As the bowels had not acted since her seizure, a drop of croton-oil was this evening placed upon her tongue.

27th.—The medicine operated freely thrice, but the soporose condition continued without much change. During one of her rare waking intervals, she was led home, a distance of a hundred yards, and fell asleep on the way. In the evening, having propped her up in bed, I examined the fundus of the eye with the ophthalmoscope. Owing to an irregular distribution of the retinal vessels in the right eye, and to her wincing when the eyelid was touched, the observation was made on the left. The colour of the fundus became paler as the region of the optic disc was approached, though whether this merely arose from deficiency of the superficial layer of choroidal epithelium, or from actual anæmia of the vessels of the choroid in that part,[1] I was unable to determine. Certainly the choroidal vessels were very plainly visible even to their tolerably fine ramifications. There was, however, a marked contrast in size between the retinal veins and arteries. Compared with their appearance after the attack had quite passed away, the veins were larger and the arteries smaller, and at the time this was especially distinct, the veins standing boldly out against the white background afforded by the disc and orange-coloured choroid, while the arteries were fine and hairlike. There was no pulsation in either set of vessels.

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[1] Dr Hughlings-Jackson on the Retina in Sleep. See Carpenter's Physiology, 6th edit., p. 590.

I watched for long before the disc came fully into view, but at last the eye remained sufficiently steady, with the optic nerve in the centre of the pupil, to allow me to assure myself of the correctness of the observation.

28th.—At 10 A.M. was still in the state of trance, and had been so without waking since 5 P.M. yesterday. The skin of the right eyelid was to-day seen to be marked with reddish lines, and round the eye there was yellow subcutaneous staining. She awoke at eleven, soon again to relapse into unconsciousness; but at my evening visit she was sitting up in bed at length thoroughly roused. She declared she had never been asleep, said she remembered nothing since sitting down on the stair in her master's house on the evening of the 25th.

Though several times asleep after this, the slumber was never again so profound, and she was almost quite well on the 3d March, on which day the catamenia appeared, though scantily. For a day or two after she was otherwise well, the vision of the right eye was rather indistinct.

There are two points in this case (which in its duration reminds one of the classic legend of the nuptials of Alcmena and Jupiter) deserving a moment's consideration.

First, as to *causation.* Had the blow anything to do with the seizure? The case appears to me to be an example of one of the rarer forms of the remote consequences of nerve-lesion. Hufeland[1] relates a case of *running* and of *catalepsy* caused by a blow on the head. Attacks of hysteria often date their first appearance from a fall, or even from some injury so trivial apparently as to leave no visible trace. Again, there is a stage of incubation in hysteria and allied affections as truly pre-existent, though perhaps less evident, as in smallpox or measles. In many instances, this stage is marked by a degree of capriciousness as to diet, and this producing more or less defective nutrition favours the nervous instability, and uncommon reflex effects result in such persons from causes which in a healthy nervous system would be trifling.

Secondly, as to the *nature* of the attack. The blow was followed by reflex vaso-motor changes; the circulation through the brain was impeded by the contraction of the arterial and dilatation of the venous system; renewal of tissue-change in the central nervous system was at its minimum, and a deep stupor was the result. By degrees this wore off, but the imperfection of vision, and the feeling of weight in the head, remaining after the return of consciousness, would show that the vascular system was slow in recovering its natural tension.

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[1] Holmes's System of Surgery, 2d edit., vol. iv. p. 191.

ARTICLE V.—*Record of the Cases of Tumours of the Breast admitted into the Clinical Wards of the Edinburgh Royal Infirmary from* 1833 *to* 1869. Extracted from the Ward Journals by JOHN CHIENE, M.D., F.R.C.S.E.

IN a graduation thesis on "Diseases of the Breast," I was enabled, through the kindness of the late Mr Syme, to illustrate the section on tumours by tables of cases treated in the clinical wards. At that time the cases from 1850 to 1864 were tabulated; to these are now added the cases from 1833 to 1850, and from 1864 to 1869, when Mr Syme resigned the chair of Clinical Surgery. With a few exceptions, in which the journals are amissing, the whole period from 1833 to 1869 is thus completed. All doubtful cases have been omitted. I trust that some interest will be attached to the results of Mr Syme's treatment of this important class of cases during his long tenure of office as Professor of Clinical Surgery.

The tumours have been classified under the following heads:—1. Cystic; 2. Mammary Glandular, or Fibrous; 3. Scirrhous; 4. Encephaloid; 5. Epithelial.

		No. of Cases admitted.	No. of Operations performed.	Result of Operation.	
				Recovered.	Died.
Innocent Tumours,	Cystic, . .	28	26	26	...
	Mammary Glandular, or Fibrous,	29	29	29	...
Malignant Tumours,	Scirrhous, .	187	145	135	10
	Encephaloid,	2	2	2	...
	Epithelial, .	1	...	...	...
	Total, .	247	202	192	10

247 cases—245 females, and 2 males.[1] 202 operations, 10 deaths, nearly 5 per cent.; or, in other words, of every 20 persons operated on, 1 died. The fatal cases occurred after excision of the breast for primary scirrhus. The cause of death was shock in two cases, and in the remainder either erysipelas or inflammatory affections of the thoracic viscera.

1. *Cystic Tumours.*—This class includes simple serous cysts, compound cysts, and fibro-cystic tumours. 28 cases, 26 operations,

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[1] 1. W. D., æt. 50, admitted August 1850. Fibrous tumour. Removed with a successful result.

2. D. G., æt. 51, admitted June 1867. Scirrhous tumour of right breast. Tumour removed. Patient re-admitted in May 1868 with a similar tumour in right breast. An attack of insanity necessitated patient's removal to Morningside Asylum.

all successful. The simple cysts (11 cases) were punctured, followed by the application of a blister. Of the remaining 17 cases, in 15 the tumour alone was removed, in 2 the breast was excised along with the tumour. Average age on admission, 39 years; average duration of disease before admission, 4 years (shortest duration 2 weeks, longest 13 years); average age when the tumour was first observed by the patient, 35 years.

2. *Mammary Glandular or Fibrous Tumours.*—These tumours have received very various names: fibrous sarcoma (Cruveilhier and Syme); pancreatic sarcoma (Abernethy); chronic mammary (Astley Cooper); and mammary glandular (Paget). 29 cases, 29 operations, all successful. 28 females, 1 male. Average age on admission, 30 years; average duration of disease before admission, 2 years; average age when the tumour was first noticed by the patient, 28 years; average stay in hospital after operation, 18 days. In the majority the tumour alone was removed, in the remainder the breast was excised along with the tumour.

3. *Malignant Tumours.*—190 cases; 187 *scirrhous*, 2 *encephaloid*, and 1 *epithelial* cancer. The case of epithelial cancer was too far advanced to admit of operation. E. W., æt. 55, admitted 16th December 1863. The disease commenced in 1854 as a small ulcer. The whole mamma and the lymphatic glands in the axilla are now involved. In both cases of encephaloid the tumour was removed. 1. J. H., æt. 45, admitted 8th December 1859. Duration of disease, 8 weeks. Tumour the size of a closed fist. Tumour removed. Dismissed cured 1st February. This patient was re-admitted in March of the same year. The axilla is now full of enlarged glands. Dismissed *in statu quo.* 2. M. G., æt. 54, admitted 31st January 1866. Duration of disease, 5 months. Tumour the size of a child's head. Tumour removed. Dismissed cured 9th March. *Scirrhous Cancer.*—Total number, 187, of which 178 were primary, 9 secondary. Of the primary cases, 137 were operated on; in 132 the breast was excised, in 5 it was removed with caustic. In 1857, 2 cases occur in which an enlarged lymphatic gland was removed with the knife before the application of the caustic; with these exceptions, no case in which the glands were affected was operated on. In 132 cases of excision, 10 deaths as a result of the operation occurred, or 7½ per cent. In 5 cases removed by caustic, 2 were cured, 1 relieved, and 2 dismissed *in statu quo.* A mixture of sulphuric acid and sawdust was employed in 4 cases, chloride of zinc paste in 1 case. The average age on admission was 49 years; the average duration of the disease before the patient applied for relief, 2 years; the average age when the disease was first noticed, 47 years; the average stay in hospital after operation, 27 days. I have noted which breast was affected in 64 cases; the left breast was diseased in 33, the right in 30, and both breasts in 1 case.

Table of 116 cases of primary scirrhus, showing the proportion of cases occurring in each decennial period:—

Under 25,	2 cases	1·7 per cent.
25 to 35,	10 "	8·6 "
35 to 45,	42 "	36·2 "
45 to 55,	36 "	31·1 "
55 to 65,	24 "	20·7 "
65 to 75,	2 "	1·7 "
Total, .	116	100

Secondary Scirrhus.—9 cases; the secondary disease was removed with the knife in 6, in 1 the disease was removed by caustic, in 2 an operation was deemed inexpedient. In one case the patient remained well after the primary operation for 36 months, in 1 for 24 months, in 1 for 18, in 1 for 12, in 2 for 4 months, in 1 for 3 months, and in 1 the disease returned before the wound of the primary operation was healed.

ARTICLE VI.—*Case of Paralysis and Sudden Death in the Pregnant State.* By Dr R. PEEL RITCHIE, F.R.C.P.E.

(*Read before the Obstetrical Society of Edinburgh*, 8*th February*.)

I DESIRE to submit this case to the Society solely on the grounds that it is no common one, and that it has been the only one of the kind I have met with, complicating pregnancy.

I can claim no merit for my accuracy of diagnosis, nor for the success of my treatment. Placed in the circumstances I was when called to see the case, I do not think, on reviewing its course, I would, even now, have acted differently; and seeing the result was fatal, I have considered it proper to place it on record, to call the attention of Fellows of the Society to a formidable form of disease complicating the pregnant state. It is to be greatly regretted that the feelings of the friends would not permit a post-mortem examination. In the medical certificate of cause of death, I found it therefore necessary to state that the patient was pregnant, suffered from paralysis, that the death was sudden, and that no post-mortem examination was permitted. I did not expect that the Registrar would have been satisfied with a certificate so worded.

15*th December* 1870.—Mrs S., aged 25.—A message was left at my house last night at a late hour to call on this patient. As I did not receive the message till midnight, in consequence of being professionally engaged, I did not call till to-day. I found her complaining of severe pain in head—all over it, but chiefly on left side. So severe was the pain that she could not move the head without screaming out. I received the following history:—She had previously enjoyed good health, but stated she had always been very "nervous." Had been married for six years. She was now pregnant for the fourth time, and in previous pregnancies had enjoyed good health; her labours were easy, and her recoveries satisfactory. She was taken ill about three weeks ago with pain in left side of head, and also apparently with pain in left shoulder, and states she was treated for rheumatic fever and neuralgia; has been unable to sleep from pain in the head; for some time has passed daily, and still continues to pass, very little water. About two weeks ago, lost power to move left arm; the left leg soon after became affected, and recently the right arm became partially paralyzed, but the right leg has still retained its motor power; there has been anæsthesia of left arm and leg for some days, but for how long is uncertain; the joints have not been swollen. Has felt no fœtal movements for several days.

On examination, she is a stout, previously healthy-looking woman. She complains of breathlessness; cannot lie except on left side. She lies almost on the abdomen, and the uterine tumour is felt displaced in consequence. She cannot move herself. The respiratory sounds are normal; the voice is clear, and she makes frequent outcries of pain. Heart-sounds are also good, except perhaps a slight prolongation of first sound, but there is no bruit. The pulse beats at 80, and is regular and of fair strength. The appetite is tolerably good; she requires to be fed. The bowels are confined. No "globus" described. The tongue is coated, indented, and drawn to left side. She passes very little water at a time, and only with great difficulty. Her desire to do so is urgent, and she requires to be often got up, from her frequent ineffectual efforts to micturate. She is moved with difficulty, from her being so heavy, and unable to assist in moving herself. The urine is loaded with red urates (to be examined); it has been scanty for some time—not exceeding a pint a day. There is no swelling of the feet, but the face on right side looks somewhat swollen. The skin is not hot, and she perspires, but not to any excessive extent. Considers she has completed 6½ months of her fourth pregnancy. The os was high, and had an irregular ragged feeling; the point of finger can be introduced. Supposes some escape of the liquor amnii occurred within the last day or two. Has felt no fœtal movement for some days. On examination, no fœtal heart-sounds were heard, but from her position in bed examination was difficult.

She is quite unable to move herself; requires to be lifted into and out of bed. There is tenderness along the course of the spine. Has no feeling in left arm, but it is warm; she cannot move it. Can tell the toes of left foot when touched, and can move right leg. The feeling in and motor power of right arm are impaired. Has constant pain in head on left side. The left cheek looks flattened. The left eyelid is opened to less extent than right, but whether from ptosis or from pressure on it I am uncertain, though inclined to regard it as a state of ptosis. Pupils are equal and contractile. Right side of face full and flushed; there is an expression of suffering.

As she was taking a saline diuretic mixture several times daily and morphia at bedtime, I made no change in treatment until I examined the state of the urine.

16th December.—Passed very little urine yesterday, and I only got some late last night. On examination, find it is albuminous, but only to a slight extent, there being little more than a trace. She had a bad night, even with the morphia. Ordered pil. col. co. immediately, and 10 gr. bromide of potass every sixth hour.

Midnight.—Was called to her, as she was stated to have labour-pains. Found there was no action of the uterus going on, but she had frequent calls to micturate; she had passed no water for nearly twenty-four hours. At 2.30 A.M. introduced the catheter, and drew off about 10 oz. of high-coloured, but not ammoniacal, urine; she then said she felt much easier; has been sweating.

17th (Forenoon).—Passed a tolerable night after I left. The bowels acted freely; left arm no better; less sensibility in left leg; less motor power in right arm; can still move right leg. Catheter used—10 oz. of urine were drawn off.

18th (Forenoon).—Passed a good night, but no urine; less nervous power all over body; head less pained; no fœtal movement. From her position in bed, had difficulty in introducing catheter; about 10 oz. were drawn off.

Evening.—Heard fœtal heart sounds this evening. She takes the bromide every four hours, and a teaspoonful of sp. æth. nitrosi twice daily.

19th (Forenoon).—Voice not so loud (partial aphonia); can now lie more on back; there is ptosis of left lid. Is unable to move left leg, or right arm or leg, but has returning feeling in and can keep left arm flexed when resting on elbow; pupils contractile, apparently equally so, and of regular shape; fœtal heart heard distinctly. Urine urgently requested to be drawn off, which was done by nurse, but the quantity is not materially increased—she suffers less pain. Professor Simpson saw her with me to-day, and recommended ergot in small doses, in the view there may be congestion of the spine.

20th.—She passed a good night, had even more power in left arm, but the urine was very troublesome, and had been drawn off. She took a good breakfast, and was cheerful. The nurse left her for a short time before 11 A.M., and, on her return, observed a change. She looked dark in colour, and the face was drawn to right side; the breathing was also affected. She was unable to speak, but the power to articulate soon returned. She was then conscious, but soon after became unconscious, and died at 1 P.M., "as the gun fired." I was not sent for to my house, but looked for at the Infirmary, through some mistake on the part of the messenger. Whilst conscious, longed for my arrival, and said she was dying. On my calling in course of the day, found she had died an hour and a quarter before. She was cold; no fœtal sounds were audible. My first thought was to remove the fœtus by section; but, considering the stage of pregnancy, and the time she had been dead, I refrained from doing so. Her pupils were dilated; the teeth firmly clenched; frothy mucus, as if she had suffered from a convulsive attack, issued from the mouth; the lips were darkly discoloured, and I failed to force open the jaws. I stated a post-mortem examination would be necessary, but this was afterwards refused.

Remarks.—When I visited this case for the first time, I saw that it was one of neither a trivial character nor of frequent occurrence. I looked for an explanation of the phenomena of the disease first in the state of the urine, expecting to find it in a highly albuminous condition; but, on the contrary, although there was a trace of albumen in it when boiled, there was not sufficient to warrant me in concluding that the state of the kidney explained the nervous symptoms. Besides, too, this was not a first pregnancy, and I was warranted, by the opinion of observers, in concluding that if albumen were present, it was most likely due to a chronic condition of kidney disease, and consequently that the presence of albumen would have been shown in larger quantity. This source of the paralysis I therefore dismissed, as being insufficient to account for it.

2d, The next view that occurred was, Is this one of those cases described as reflex? But, on reviewing the whole circumstances of the case, I did not consider that this view would explain the constant neuralgic pain on left side of head, the apparent ptosis of left lid, and the progressive extension of the paralysis from left arm to left leg, to right arm, and subsequently to right leg.

3d, Another source of the paralysis which occurred to me was embolism; but careful auscultation convinced me there was no valvular lesion of the heart, and the progressive character, without sudden commencement of the paralytic attack, induced me to abandon this view.

4th, I must own I had some doubt at first whether the attack might not be hysterical. The statement of the patient that she had been previously "nervous," her outcry, and the retention of the urine, her healthy appearance, all favoured this; but I dismissed this view when I became more familiar with the case. The absence of the hysterical globus, the perfect anæsthesia, the ptosis, the scanty renal secretion, all induced me to regard the case as due to some cause more serious, however hysterical the manner of the patient might be.

5th, The only conclusion I could come to was, that the source of the paralysis was in the central nervous system, and that the paralysis was to be regarded as a complication, not a consequence, of the pregnant state.

The diagnosis I made was, that the patient, whatever other lesion there might be, was suffering from congestion of the meninges of the spine and base of the brain. Adopting this view, I placed her on the bromide of potass, at first to the extent of 40 grs. a day, and afterwards on 60 grs. As the diuretic mixture she was taking had produced but little effect, although powerful in its composition, I intermitted it; and as the bowels had been costive for several days, obtained a free action by meams of compound colocynth pill. As the nursing of the patient was very far from what it should be, I felt it my duty to recommend her to apply for admission to the Maternity Hospital as a private patient; but this was declined, and it was only two days before her death that she was placed under the care of a qualified nurse. This diagnosis does not, however, account for the sudden termination of the case within two hours.

6th, Since her death, when I review all the indications of her state, I am rather inclined to view her disease as having possibly been a local cerebritis ending in abscess, and that the congestive symptoms of the spine and base had been secondary to the local cerebral inflammation. Not having seen the patient in the earlier stages, I cannot state whether the premonitory gastric indications existed, or whether the sickness of cerebral disease might not have been supposed that of pregnancy; but when I first visited her, the confined state of the bowels was repeatedly spoken of by her, and the difficulty there had been to get them to act by means of medicine was alluded to. I certainly have seen one instance verified by an autopsy in which cerebral abscess existed and proved fatal, in which, till within six days of death, the symptoms of cerebral inflammation were not distinct, but in which a severe local cephalalgia existed on the left side, and corresponded with a circumscribed intracranial abscess.

The symptoms in Mrs S.'s case which seem to me to favour the view that she suffered from a local cerebritis, are—The headache being the first symptom, and, so far as I can understand, of sudden origin and local in position, becoming unilateral; the ptosis; the intellect being so little affected; the sensibility of the limbs being so markedly affected, whilst the temperature was not diminished; the progressive character of the paralysis; and, in the absence of any disease in the thoracic viscera, the sudden death, which seems to have been preceded by convulsion, followed by coma of a very limited duration, and might possibly have been produced by the rupture of a cerebral abscess. The absence of delirium, the regular state of the pupil, the returning power in left arm, and also there being no rigidity of any limb, may be urged against this supposition; but an ordinary apoplectic attack appears to me to be insufficient to explain the circumstances of her death.

Before concluding, one word may be expected regarding my non-interference on behalf of the fœtus. When I saw the patient was dead, my first thought was to open the abdomen; but reflecting, when I heard that she had been so for at least an hour and a quarter, that there was no probability of saving the child, and even if I had had the chance of operating immediately after death, that it was doubtful if the child would have been viable, I refrained from a procedure which I felt would have only been for the gratification of my own curiosity, and could have resulted in no benefit to the unborn child or the afflicted relatives.

ARTICLE VII.—*The Therapeutic Actions and Uses of Turpentine.* By J. WARBURTON BEGBIE, M.D.; Fellow of the Royal College of Physicians, Edinburgh.

(*Read before the Medico-Chirurgical Society of Edinburgh, 7th June.*)

TURPENTINE, the *τερέβινθος* or *τέρβινθος*, and in the earlier form *τέρμινθος*, of the Greeks, has an ancient as well as interesting history. Already esteemed as a remedy in Hippocratic times, and mentioned in three of the treatises which bear the name of the Father of Medicine,[1] if indeed these were not composed by Hippocrates, there exists little ground for questioning the identity of the Pistachia Terebinthus,[2] a plant yielding, in common with certain of the Coniferæ, the liquid turpentine, with the Terebinthus of the ancient writers. By Theophrastus, Dioscorides, Galen, and Pliny, many original observations concerning the use of turpentine are also made, and these are copied by such subsequent writers as Aetius, Oribasius, Paulus Ægineta, and Alexander Trallianus. Hippocrates, at least the Hippocratic author, had ascertained the emmenagogue virtues of turpentine, and also its action in restraining discharges from mucous surfaces, particularly those of the genito-urinary passages,[3] and the writers subsequent to him, of whom Dioscorides[4] as a Greek, and

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[1] ΠΕΡΙ ΓΥΝΑΙΚΕΙΗΣ ΦΥΣΙΟΣ. ΠΕΡΙ ΓΥΝΑΙΚΕΙΩΝ, τὸ δεύτερον. ΠΕΡΙ ΣΥΡΙΓΓΩΝ.

[2] "Indeed, this last mentioned plant is probably the true Terebinthus of the ancients."—*Pereira*, The Elements of Materia Medica and Therapeutics, vol. ii. part i. p. 1183.

[3] After referring to passages in the Hippocratic writings regarding turpentine, *Trousseau* and *Pidoux* observe, "Si la première de ces citations est vague et caractérise peu l'action spéciale de la Terébenthine, ce que nous sommes loin de nier, puisque le père de la médecine n'a presque jamais parlé d'un remède excitant sans le déclarer emménagogue, la seconde établit clairement que ce grand observateur avait administré la Terébenthine dans les cas où elle est le mieux indiquée, les flux muqueux, et spécialement ceux des voies génito-urinaires."—*Traité de Thérapeutique et de Matière Médicale*, tome seconde, p. 582.

[4] ΠΕΔΑΚΙΟΥ ΔΙΟΣΚΟΡΙΔΟΥ. Περὶ ὕλης ἰατρικῆς, βιβλίον πρῶτον. Περὶ Τερμίνθου. In this passage the learned Anazarbian signalizes the possession by turpentine of diuretic and aphrodisiac properties, also its virtues in pulmonary catarrhs and phthisical disorders, in rheumatic affections, in palpebral inflammations, attended by loss of the eyelashes, in scabies, and certain chronic cutaneous eruptions. Moreover, he recommends the employment of turpentine in the form of an electuary, with honey (ἐκλεικτόν, *Hippocrates*—ἔκλειγμα, *Aretaeus*

Pliny[1] as a Latin author may be particularly cited, indicate their knowledge of its possessing many other important properties.

Coming down to the modern history of Turpentine, we meet with a subject naturally complex, from the circumstance that there are *many* officinal substances derived from the coniferous plants. A very clear and instructive narrative of the natural and chemical history of the Terebinthinæ is given by Dr Christison in his Dispensatory, and the previous labours of M. Guibourt[2] and Dr Pereira are by him both acknowledged and rendered further available. The last mentioned authority, Dr Pereira, in his able discussion of turpentine, has found it most convenient to treat of the coniferous terebinthinates under four heads:—1. The oleo-resinous juices. 2. The volatile oil obtained by distillation. 3. The resinous residuum. 4. Tar and pitch. In a closely similar manner Dr Christison considers *seriatim* the various substances admitted into the pharmacopœias, and in the following order:—Frankincense, with its modification, Burgundy pitch, common turpentine, Venice turpentine, Canada balsam, resin, oil of turpentine, tar, and pitch. Of these, frankincense (*Thus Americanum*), Burgundy pitch (*Pix Burgundica*), Canada balsam (*Terebinthina Canadensis*), resin (*Resina*), oil of turpentine (*Oleum terebinthinæ*), and tar (*Pix liquida*), find their places in the British Pharmacopœia; the Terebinthina vulgaris and Terebinthina Veneta are excluded. Among the substances now named, the oil distilled from the oleo-resin turpentine, which, again, is obtained from various pines, is a most valuable therapeutic agent, possessing actions on various organs and structures of the body which render it available in the treatment of disease. To these, attention will be directed after a brief consideration of what is known regarding the physiological action of the drug. The ultimate physiological action of oil of turpentine may be said to be twofold; it is irritant and stimulant. But these actions embrace others which turpentine very notably possesses, and we observe that, according as its irritant action is exerted on the intestinal canal, the urinary organs, or skin, it is a cathartic, a diuretic, or a diaphoretic. As a stimulant, it acts in producing, when a moderate dose has been taken, a by no means disagreeable sensation of warmth in the stomach, which is sometimes diffused over the greater part of the abdomen

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literally, a medicine which melts in the mouth),—a method of administration of the remedy, the mention of which (in the words of the French writers already quoted, "remise en honneur de nos jours") gives increased interest to the Hippocratic passage; finally, turpentine is noticed as affording relief to pain when simply applied to the side, or used as an ointment in pleurisy.

[1] C. Plinii Secundi Naturalis Historiæ, Tomus Secundus. Lib. xiii., cap. vi. De Terebintho; also lib. xxiv., cap. vi. In the latter, there occur the following sentences: "Terebinthi folia et radix collectionibus imponuntur. Decoctum eorum stomachum firmat. Semen in capitis dolore bibitur in vino, et contra difficultatem urinæ. Ventrem leniter emollit. Venerem excitat. Piceæ et laricis folia trita et in aceto decocta dentium dolori prosunt."

[2] Histoire Abrégée des Drogues Simples, tome second, p. 339.

and chest. It quickens the circulation, and augments the temperature. Moreover, in limited doses, it unquestionably produces a stimulating action on the brain, giving rise to impressions which closely resemble those produced by alcohol, and with these an ability for sustained mental as well as physical exertion. Should the quantity taken or administered be more considerable, it may cause remarkable effects on the sensorium. Such has been known to produce disorder of the intellectual functions, nearly identical with intoxication. Dr Copland, in his own person, realized this condition. Sir Thomas Watson also speaks of a patient who was supposed to be dying, but was found to be only intoxicated by the free dose of turpentine which he had swallowed.[1] Occasionally the oil has been observed to cause sleep. Indeed, a remarkably soothing influence on the nervous system is a by no means uncommon result of the administration of turpentine. Purkinje noticed this. The same has been experienced by others after taking the oil in doses of a drachm. Dr Andrew Duncan observes, "I have seen large doses produce temporary intoxication, and sometimes a kind of trance, lasting twenty-four hours, without, however, any subsequent bad effect."[2] Applied to the skin, turpentine produces rubefaction, and sometimes a vesicular eruption. A scarlet eruption over the skin has also been observed to succeed the internal administration of turpentine. That the external application may be followed by cutaneous absorption is evident from the distinct odour of turpentine in the breath of some persons, over whose chests or other portions of the trunk the warm terebinthinate epithem has been placed. In the same way the peculiar, indeed distinctive, odour communicated to the urine by turpentine, that of violets, may be produced. The violaceous odour of the urine here referred to, depends on a portion of the oil having undergone a chemical change in its passage through the system; but while this is taking place, it also appears that some portion of the oil leaves the economy by the urine altogether unchanged. This is illustrated in the experiments by Moiroud on horses, to whom turpentine had been given for some days, in the enormous dose of ten or twelve ounces.[3] It is not by the kidneys alone, however, that the absorbed turpentine is eliminated. The skin and the bronchial surfaces act in a similar manner. After the administration of a few doses, it may be even a single dose, if large, there is a distinct odour of turpentine recognisable over the cutaneous surface, and in the breath. It may be further observed, that, while the violaceous odour of the urine is produced after the earlier doses of the remedy, in cases in which its continued administration has been practised, the urine ultimately comes to have an odour altogether terebinthinate, the by no means disagreeable aroma, resembling violets, being lost. This effect may, in all probability, be accounted for by the more pungent odour of the turpentine concealing the aroma, during the increased elimination of the remedy by the kidneys, for the result of a suspension of the administration of the turpentine is the restoration of the violaceous odour to the urine before the final disappearance from it of all characteristic smell. The persistence of the violaceous odour is a notable feature. That produced by a single small dose of turpentine may be readily detected in the urine for eight-and-forty hours. It is much more persistent than many stronger odours which the urine acquires from the ingesta, as, for example, from asparagus. A further effect of turpentine is irritation of the urinary organs, leading not unfrequently to hæmaturia; and apart from any idiosyncrasy or special susceptibility to the irritant action of turpentine on the kidneys, which is possessed by some few individuals, there appear to be two modes of administration, after either of which the hæmaturia may come. It may succeed the use of the remedy, in a large or considerable dose, given probably with the view of producing catharsis. Here the remedy has either been wholly directed to the urinary organs, the intestinal canal escaping its influence, or, reaching the latter and failing to exert any effect, it has been reabsorbed, and ultimately attracted to the kidneys. This view seems borne out by the circumstance, that, while in one instance the hæmaturia is produced very speedily after the administration of the turpentine, in another, a considerable time has elapsed before the occurrence of the usual irritation. There is one other interesting circumstance in connexion with the action of turpentine on the kidneys. It would appear that the production of the violaceous odour may, to a certain extent, be taken as a test of the integrity of these organs. However the drug has been introduced into the system, whether by the mouth or rectum, from the skin, or by inhalation, this seems to hold good; but the most delicate test is that by cutaneous absorption, and it admits of being proved that a shorter time elapses till the odour in question is produced, and when produced, the odour is infinitely more distinct, when no symptom or indication of renal disease is in existence, than when the converse obtains. There may be reason in avoiding the use of turpentine as a counter-irritant in cases where the kidneys are unsound, and the caution regarding its use, which is expressed by some writers, Dr George Johnston[1] for example, may prudently be acted upon; nevertheless, it is consistent with my own observation, that, when under such circumstances turpentine is employed as a rubefacient or counter-irritant, the elimination which succeeds its absorption by the skin is effected conspicuously by the bronchial mucous membrane, by the intestines, and probably also by the cutaneous surface.

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[1] Lectures on the Principles and Practice of Physic, vol. i. p. 663.

[2] The Edinburgh New Dispensatory, p. 553.

[3] In Pereira's Materia Medica, vol. ii. part i. p. 1188; also Headland on the Action of Medicines in the System, p. 79.

With these few observations on the physiological action of the drug, I pass to the consideration of its therapeutic actions and uses.

[1] Diseases of the Kidney, p. 133.

There are certain therapeutic actions of turpentine to which a brief reference is alone required, experience having already incontestably determined its precise value as a remedy. Foremost among these may be noticed its operations as a *cathartic* and *anthelmintic*. As a simple cathartic, turpentine is rarely employed, and for the good reason that its action, even when administered in large doses, is uncertain. When combined with other purgatives, and more particularly castor-oil, a greater certainty of operation is secured. The combination now referred to is justly esteemed, and, as Dr Christison remarks, "has often moved the bowels in obstruction from long-continued constipation, after other powerful cathartics had failed." Dr Kinglake has particularly insisted on the efficient operation of turpentine in cases of obstinate constipation attended by exaggerated tympanitis, while Dr Paris has borne testimony to its value where the obstruction has apparently been dependent on affections of the brain. The anthelmintic virtues of turpentine are chiefly prized in tape-worm, and may be ranked with those of the liquid extract of the male shield-fern and pomegranate-root bark.[1] In the treatment of ascarides the remedy is chiefly useful when administered as an enema. It is also efficacious over the lumbrici. Turpentine is a *hæmostatic*—it arrests hæmorrhage. The interest attached to this action of the drug is increased by the consideration that it also causes one variety of hæmorrhage, hæmaturia. The condition which determines the escape of blood from the capillaries is, however, very different in the two cases. The one is an active hæmorrhage, due to the presence of the absorbed turpentine in the blood of the Malpighian capillaries, causing their irritation and rupture; while the other, that which turpentine cures, is of a passive description, determined in all probability by a neurosis of blood-vessels. Turpentine in the latter instance is an available remedy. I am inclined, from what I have witnessed of its action in cases of purpura hæmorrhagica, with which hæmaturia has been associated, to regard it indeed as the most available remedy. Its action I believe to be through the nervous system, controlling and regulating the current of blood in the minute vessels by stimulation of their contractility. In many, if not in all, of the different forms of hæmorrhage turpentine has been employed, and a strong testimony has been borne by many experienced physicians to its value. Thus, in treating of the means we possess for the arrestment of pulmonary hæmorrhage, Dr Wood of Philadelphia remarks: "Another hæmostatic medicine, which sometimes acts very promptly and efficiently in hæmoptysis, is oil of turpentine. How it operates is not well understood, though probably by some influence on the capillaries, perhaps through the sympathetic nerve-centres. It is applicable to cases without inflammatory action or febrile excitement; and if plethora exist, it should be subdued before recourse is had to the oil. Mere frequency of pulse does not contraindicate it. I have found no remedy more efficacious than this under circumstances favourable to its use. In one apparently desperate case I succeeded after failure with all other means. Ten drops of it may be given every hour or two. If the hæmorrhage is very copious, the dose may be much larger."[1]

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[1] "As perhaps the most effectual remedy we possess for the expulsion of tape-worm, oil of turpentine stands deservedly in high repute."—*Neligan's* Medicines, their Uses and Modes of Administration. Edited by Dr Macnamara. 6th edition, p. 47. "Oil of turpentine appears to be the best remedy for expelling tape-worms; it is usually given in large doses for this purpose, but I have sometimes found that it fails when thus given, while the continued use of it in small doses succeeds in expelling the parasites. Thus, in the case of the late Mr Williams, the apothecary in Charlemont Street, ten drops given three times a day, and continued without intermission for six weeks, expelled a long tape-worm, which had resisted the same remedy in large doses."—*Graves's* Clinical Lectures, Lecture 53. "Oil of turpentine unquestionably acts as a most virulent poison upon the entozoa, especially upon the tape-worm, which it expels lifeless and livid."—*Paris*, Pharmacologia, p. 354.

In hæmatemesis, as well as in hæmoptysis, turpentine was much used by the distinguished John Hunter: in regard to the former, he states that he has seldom found it fail when given in doses of ten drops every two or three hours. In uterine hæmorrhage, the value of the remedy has been tested by many observers. Dr Copland remarks: "I have had recourse in extreme or prolonged cases to the spirits of turpentine, either in a draught or in an enema, or in the form of epithem or fomentation, applied over the hypogastrium, and always with success. This practice was first adopted by me in 1819, in metro-hæmorrhagia occurring after delivery, and has been pursued by me in other hæmorrhages, whenever it was considered advisable speedily to arrest them. In 1820, I publicly recommended the treatment; and I know that it has succeeded with those who were thus led to employ it."[2] In the intestinal hæmorrhage of fever, in hæmorrhoidal flux, in epistaxis, and the profuse bleeding which occasionally succeeds the extraction of teeth, in the hæmorrhage from leech-bites and from wounds, internally administered and externally applied, turpentine has often proved eminently useful.[3]

As a *stimulant*, turpentine has been very largely employed in the advanced stages of adynamic fevers. In typhus, more particularly where there exists marked depression of the vital powers, the patient being sunk in the bed, with more or less of stupor or low muttering delirium, and coma evidently threatened, with very probably hiccough, subsultus tendinum, and tympanitic distention of the belly, there is no remedy we possess which is so capable of effectually rousing the vital energy. I appeal with confidence to the experience of physicians who have seen much of fever, when I affirm that, without turpentine, we should, in such circumstances, be, if not powerless, at all events deprived of our most useful and potent auxiliary. In connexion with the stimulating effect of turpentine on the nervous system, and through it on the vascular, there is to be taken into account its wonderfully soothing action on the nervous centres, how delirium and restlessness are overcome, and often completely subdued by its use.[1] Not only so, but even maniacal excitement has been similarly overcome. Dr Graves, in speaking of the administration of turpentine, under just such circumstances, remarks: "Hence the value of this remedy is very great indeed, for it not only opens the bowels (a point of considerable importance in such affections), but also removes tympanitis, and exercises a powerful influence in controlling and quieting the nervous system. I have seen persons' lives saved by a few doses of the oil of turpentine, and have watched its tranquillizing effect on the nerves with pleasure and surprise."[2] Dr Copland speaks of the spirits of turpentine exhibited in similar circumstances as "frequently productive of benefit."[3] Dr Murchison recommends the internal administration of turpentine in the extreme tympanitis of typhus; also in the hæmorrhage of enteric fever.[4] The eminent Swedish physician, Dr Magnus Huss, has emphatically indicated the reliance which may be placed in turpentine, as a remedy in the low forms of chest affection, the catarrh and pneumonia, occurring in fevers.[5] He remarks: "I have a rather long experience of this treatment with turpentine, as I before said in the account of the treatment within the hospital in 1842, with respect to pneumonia typhosa, that the use of the turpentine in certain cases of typhus fevers is one among the greatest steps forward the medical art has made of late in the treatment of these forms of disease."[5] Nor is the language employed by Dr Murchison less assuring. He states: "Its effects in the bronchitis of adynamic fevers are sometimes marvellous. It ought to be given in doses of from ten to twenty minims, with fifteen to thirty minims of chloric ether or sulphuric ether, and half a drachm of spiritus juniperi compositus, in mistura acaciæ, mistura amygdalæ, or yelk of egg. The dose may be repeated every two hours at first, until the desired effect be produced. After a few doses the patient often begins to cough and expectorate large quantities of viscid mucus, with great relief to the respiratory symptoms. The quantity of urine is likewise increased. I have never known strangury produced."[6] Dr Wood of Philadelphia, to whose confidence in turpentine as a hæmostatic reference has already been made, uses the remedy largely in the treatment of typhoid fever. He observes:

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[1] A Treatise on the Practice of Medicine, vol. ii. p. 329.

[2] Dictionary of Practical Medicine, vol. ii. p. 113.

[3] See Terebinthinæ Oleum, in Manual of Practical Therapeutics, by Edward J. Waring, M.D., p. 724.

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[1] Dr Dewees found the spirit of turpentine, in doses of twenty drops, procure sleep in cases of uterine cancer, when it could not be obtained from opium.—Diseases of Females, p. 274.

[2] Op. cit., p. 101.

[3] Dictionary of Practical Medicine, vol. i. p. 1037.

[4] Treatise on Continued Fevers, pp. 286, 575.

[5] Statistics and Treatment of Typhus and Typhoid Fever; from twelve years' experience, gained at the Seraphim Hospital in Stockholm, 1840-1852, by Magnus Huss, M.D. Translated from the Swedish original, by Ernst Åberg, M.D., p. 139.

[6] Op. cit., p. 283.

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words have just been quoted, entertains a different opinion now, and that he, like most physicians, would not be unwilling to subscribe to the statement of Dr Russell Reynolds—"Bromide of potassium is the one medicine which has, so far as I know, proved of real service in the treatment of epilepsy."[1] In *chorea*, turpentine as a cathartic, and likewise as an external application, has been highly recommended by Dr Copland[2] and other physicians.. Dr James Jackson of Boston, U.S., in alluding to the treatment of chorea, says, "But the great remedy is the oil of turpentine. . . . In a severe case, however, or when other remedies fail, this should be used. . . . In a very young child, you may begin with five drops three times a day, but the dose should be increased steadily till relief is obtained, if no objection occurs. . . . A child of eight or ten years of age will sometimes bear a teaspoonful for a dose. This remedy is successful whether given early or late in the disease."[3] As an anthelmintic, turpentine deservedly holds its ground in the treatment of chorea, as well as other nervous disorders dependent on the reflex irritation which worms in the intestinal canal produce; but probably the opinion of Dr Radcliffe, as expressed in the following statement, will meet with little contradiction, in so far as the abandonment of turpentine is concerned: "Turpentine has been given for various reasons in chorea, as an anthelmintic and purgative chiefly. At one time I gave it rather as a general stimulant, and, as it seemed, with benefit to the patient. I then tried mineral naphtha with the same view, and came to the conclusion that this medicine was more pleasant than turpentine, less trying to the system, and not less efficacious. During the last six or eight years, however, I have rarely given either one or the other of these medicines, and one chief reason for this seems to be that I have gradually come to prefer the treatment of which I have to speak in a few moments."[4] That plan of treatment, as those familiar with the writings and practice of the eminent physician now referred to are aware, is "the free use of alcoholic drinks." For my own part, I am so thoroughly satisfied with the potency of arsenic in the treatment of chorea, as to esteem it above all other remedies. In tetanus, infantile convulsions, puerperal eclampsia, and asthma, turpentine has at different periods, and by different physicians, been employed as a remedy; in none of these, however, has it for any time, or with justness, retained its reputation as a therapeutic agent. It is necessary now to notice its employment in the treatment of nerve-pain, or neuralgia, in various of its forms. Of these, sciatica is the one in which turpentine has been chiefly used. The remedy is not new; Galen certainly used it; but Dr Cheyne of Dublin, and Dr Francis Home, were the earliest, in recent times, to employ it. The latter observes, "I have used it for many years, as an efficacious and valuable medicine."[1] Seven cases of pure sciatica are detailed, which were treated in the clinical wards of the Edinburgh Infirmary; of these five were cured, and the remaining two much relieved. Dr Home adds, "I have cured a great number of patients, in private practice, during the many years I have used it." He prescribed the remedy according to Dr Cheyne's plan, with a draught of sack whey or warm drink after it. The following is the prescription: ℞ Olei terebinthinæ, ʒij.; mellis optimi, ℥i. M. Fiat linctus. Capiat cochlear parvum mane et vespere. Superbibendo haustum potus communis tepidi. Dr Copland[2] speaks very favourably of the use of turpentine in sciatica, and also in other forms of neuralgia. In France, turpentine was largely administered, and highly esteemed as a remedy in neuralgia, by Recamier and Martinet; and although M. Valleix is not so sanguine in his appreciation of it, he readily admits its possession of notable therapeutic properties in this disease.[3] I have frequently employed it in sciatica, also in crural and brachial neuralgia, and with great benefit, so much so as to feel satisfied that, in turpentine, we possess a very valuable remedy for such disorders. I have, on several occasions, prescribed turpentine in cases of long-standing sciatica, in which the violence and lengthened continuance of the pain had greatly reduced the patient's strength, and in one or two instances had caused great debility. Ordinarily, I have used it when other remedies had failed; and in one case, which occurred this last winter, not only had many remedies failed, but the suffering of the patient was extreme and his prostration great. His recovery was complete after taking the turpentine for three weeks. It agrees well with old people, who are so frequently the sufferers from sciatica and other neuralgias. The dose varies from ten to thirty minims thrice daily. Usually I have prescribed twenty minims, to be taken in a little cold water, thrice daily. The *modus operandi* of turpentine in neuralgia, and particularly in sciatica, is, I am disposed to think, not unfrequently connected with its action on the intestinal mucous surface, with some irritation of which the painful nerve affection is not unfrequently connected. The same remark applies to irritation of the kidney as a cause of sciatica, in which case Sir Thomas Watson has conjectured turpentine does most good.[4] In illustration of this I may refer to an experience by no means uncommon, that after a brisk action of a cathartic, and for this purpose none is more suitable than the combination of turpentine and castor-oil, a severe attack of sciatica has been entirely removed. A better understanding of its action, however, as a remedy will, I hope, be suggested by some considerations which are to follow.

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[1] A System of Medicine, vol. ii. p. 280.
[2] Medical Dictionary, vol. i. p. 334.
[3] Letters to a Young Physician just entering upon Practice, p. 86.
[4] Reynolds's System of Medicine, vol. ii., article Chorea, p. 138.

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[1] Clinical Experiments, Histories, and Dissections, 1783. Experiments upon the Effects of the Oleum Terebinthinæ in the Sciatica, p. 265.

[2] Op. cit., vol. ii. p. 891.

[3] Valleix, Traité des Névralgies, p. 632.

[4] Op. cit., vol. i. p. 733.

Turpentine enemata are likewise useful in sciatica. As an external application in all neuralgic affections, turpentine acts much more efficaciously than the mere counter-irritant and rubefacient effects which it produces will serve to explain; the remedy is absorbed, and in some way or other operates through the blood on the pained nerve. "I have known oil of turpentine," remarks Dr Pereira, "now and then act most beneficially in sciatica, without giving rise to any remarkable evacuation by the bowels, skin, or kidneys, so that the relief could not be ascribed to a cathartic, a diaphoretic, or a diuretic operation." This statement exactly expresses the experience which I have had of the remedy in the same disease. I venture to believe that the efficiency of the drug, when applied externally, in bronchitis, pleuritis, and pneumonia, also in laryngitis, in which Dr Copland highly prized it, and in abdominal inflammation, admits of a similar explanation, that there is inherent in turpentine a remarkable power of restraining inflammatory action. In *chronic rheumatism*, and in *lumbago*, the oil of turpentine has been largely employed, more especially as an external application; it has also been administered internally. The stimulating and diaphoretic properties of the drug appear to exert a favourable influence on these disorders, and more particularly when the subjects of them are old and debilitated; but unquestionably the remarkable curative power possessed by turpentine over neuralgias, and chiefly among these sciatica, does not extend to rheumatic disorders properly so called.

Bearing some analogy to neuralgia is the severe headache which is apt to occur in nervous and hysterical females. In this painful affection, occurring in young persons of a delicate excitable temperament, without any menstrual or leucorrhœal complication, Dr Graves placed great reliance on turpentine. He gave it in doses of one or two drachms, to be repeated according to its effects. The best vehicle, he adds, is cold water. Some will bear and derive advantage from two or three doses of this medicine in the day, experiencing from its use a diminution of headache, and removal of flatulency, together with a moderate action of the bowels and kidneys. There is, moreover, another class of sufferers from headache, and this composed of both sexes, who may be relieved by turpentine. I refer to the frontal headache which is most apt to occur after prolonged mental effort, but may likewise be induced by unduly sustained physical exertion, what may be styled the headache of a fatigued brain. A cup of very strong tea often relieves this form of headache, but this remedy, with not a few, is perilous, for, bringing relief to pain, it may produce general restlessness, and, worst of all, banish sleep. Turpentine, in doses of twenty or thirty minims, given at intervals of an hour or two, will not only remove the headache, but produce, in a wonderful manner, that soothing influence to which reference has already been made. One dose is not uncommonly sufficient, but it is rarely necessary to repeat the remedy for more than two or three. I willingly subscribe to Dr Graves's statement, that it is best given in cold water; and have further to urge, that neither the physician nor the patient need be deterred from employing it, from the highly exaggerated notions which have been entertained regarding its disagreeable taste and liability to cause sickness.

In *diseases of the eye*, turpentine has long been a favourite remedy, chiefly in iritis and inflammation of the choroid membrane. In the rheumatic and syphilitic iritis, it was first strongly recommended by Mr Carmichael, in doses of a drachm thrice daily. Its effects in the treatment of inflammation of the eye may be uncertain, and may have disappointed the expectations of some surgeons; still there can be no doubt that, by oculists generally, turpentine is up to the present time regarded as a valuable antiphlogistic remedy.

Turpentine has been proposed by some writers as a *solvent of biliary concretions or gall-stones*;[1] but although undoubtedly useful as a cathartic and diuretic in jaundice, and as an external application in allaying and even in averting the attacks of gall spasm, there seems no good ground for accepting the action here referred to.[2]

As a local application in burns, in chilblains, and in ulcers of the limbs, turpentine has had its day; but in all of these, as well as in certain other affections, of which it is here unnecessary to make mention, more approved modes of treatment have of late years been adopted.

Reference has already been made to the employment of turpentine by the ancient physicians in affections of the mucous surfaces attended by copious secretion of altered mucus, in a single word, in cases of blennorrhagia, although that term has by some been erroneously restricted to discharges from the vagina or urethra of venereal origin. There can be no doubt that, in the *latter*, when they have become, or have threatened to become, chronic, turpentine is an available remedy. In bronchitis, however, attended by excessive muco-purulent secretion, its remedial virtues are seen most conspicuously. Sir Dominic Corrigan of Dublin, and Dr Waters of Liverpool, have used it, in doses varying from a drachm to an ounce, at intervals of two hours, in cases of severe or neglected bronchitis, connected with pulmonary emphysema, and attended by excessive accumulation of secretion in the bronchial tubes. I have seen the remedy signally serviceable in such circumstances. An emetic suggests itself as a likely means of affording relief, but the frequent feeble pulse, and the clammy surface of the body, with features almost collapsed, and livid lips, forbid its employment. Turpentine is then an alternative remedy, and it is a safe one; given internally, and diligently applied externally, it will not unfrequently reward the confidence which has been placed in it. In less urgent cases than those now briefly described, but still sufficiently serious, and often little amenable to cure, we have a remedy in turpentine; I mean in chronic pulmonary catarrh attended by fetid secretion. Again, in all cases of bronchial abscess, in pulmonary abscess, and in the formidable gangrene of the lung, turpentine may be hopefully employed, from what has already been observed of its effects. Many years ago, I was strongly impressed by witnessing the remarkable influence produced by small and frequently-repeated doses of turpentine in a case of pulmonary gangrene in the Royal Infirmary; and since then I have always prescribed it in such circumstances. Its action I believe to be stimulating, but also antiseptic, I had almost said specific. Speedily, under its use, the extreme fetor of the breath and expectoration undergo a change; then the latter becomes diminished in amount, while blood disappears from it, and with these changes a corresponding amelioration in the general condition of the patient takes place. Turpentine is borne, in these cases, in a way in which alcoholic stimulants are not. This fact I saw very strikingly illustrated in the case of a man about forty years of age, but of somewhat broken-down constitution, the subject of gangrene of the lower part of the right lung consequent on pneumonia. He was treated by thirty-minim doses of turpentine administered every second or third hour, continued for many days, and the result was most satisfactory. Skoda, the eminent physician of Vienna, has employed the inhalation of turpentine vapour in the treatment of the same disease. The oil of turpentine is poured upon boiling water, and the patient is directed to inhale the vapour every second hour for fifteen minutes at a time.[1] During the early summer of 1870 I saw, with Dr Somerville, a gentleman who, while convalescent from a severe attack of modified smallpox, had become affected by cough, fetid expectoration, and marked febrile disturbance. Over the upper part of the left mammary region, in this gentleman's chest, there was dulness on percussion, extending below into the region of cardiac dulness, and upwards into the subclavicular region, where it was less pronounced. On auscultation there was audible abundant coarse moist rattle, and the resonance of voice was much increased. Over the other portions of the chest the physical signs were normal. The patient complained of the extremely disgusting odour and taste of the expectoration, and was frequently caused to vomit after the effort of coughing had led to its discharge. He was ordered thirty minims of the oil of turpentine in a small wineglassful of cold water every third hour, and this he continued to take for several days. There occurred no disagreeable effects from the remedy, but speedily a notable diminution in the amount of the expectoration, while gradually its fetid character also disappeared. The doses of the turpentine were lessened in amount and frequency after the seventh day, but the remedy was not entirely discontinued till after the twelfth day from its commencement. In this case Dr Somerville and I noticed the diaphoretic, diuretic, and stimulant action of the turpentine, in addition to its very evident specific operation on the local disease. The patient, whose prostration was very great, while his appetite also was very feeble, had claret wine, but seemed to us to require no other stimulant than the turpentine. His ultimate recovery was complete. I have seen him lately, the picture of good health. I think it unnecessary to furnish the details of other cases similar or nearly so in their nature; but the following remarkable instance of recovery from impaction of a foreign body in the right lung, I need offer no apology for relating.

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[1] Durande's mixture, which was vaunted for this purpose, consisted of turpentine and ether.

[2] By its diuretic action the oil of turpentine may sometimes usefully influence the kidneys in cases where the epithelium is impregnated with yellow colouring matter, and consequently somewhat impaired in action.—Thudicum on Gall Stones, p. 286.

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[1] Fälle von Lungenbrand behandelt und geheilt durch Einathmen von Terpentinöl-Dämpfen. Zeitschrift der Kais. Kön. Gesellschaft der Aerzte zu Wien. 1853, p. 445.

In April 1866, I attended, with Dr Rutherfoord Turnbull, R. F., residing in Fountainbridge, who, when I first saw him, was expectorating a large quantity of extremely fetid purulent matter, stringy in appearance, and occasionally mixed with blood. This expectoration had been going on for some days previously, and was consequent upon a severe pain towards the lower part of the right side, with which the patient had been seized while at his usual occupation as a groom. There was no difficulty in recognising the existence of pulmonary condensation and evacuation. Its situation was a little below the middle part of the right lung, the physical signs being most distinct posteriorly. I recommended the employment of turpentine, and this, in doses of thirty minims every second hour, was forthwith commenced. It was continued for several days with manifest improvement in the general symptoms, which had previously indicated very considerable prostration. The fetid odour from the sputa, which had been more powerful and penetrating than anything I had before encountered, causing in myself invariably a feeling of nausea, and frequently in his wife, who assiduously nursed the patient, actual sickness, underwent a remarkable modification: not ceasing to be disagreeable, it became much more bearable. Up to the time, however, on which there occurred the interesting circumstance which I have now to record, I was unable to trace any change in the condition of the affected lung. The same dulness on percussion below the lower angle of right scapula, the same absence of all vesicular breathing, and the same somewhat distant but very coarse moist sound, with bronchial breathing and loud bronchophony over a limited space, were present, while the vesicular breathing in the upper portion of the right lung, and over the whole left lung, was greatly exaggerated or puerile. I had requested the patient's wife, his only attendant, to examine carefully the expectoration, and cautioned her not to allow any portion of it to be removed without her having subjected it to a careful scrutiny. This very unpleasant task she had performed with untiring zeal and faithfulness, when one morning, eight days after the commencement of the turpentine administration, she noticed in the sputa, which had been got rid of by an unusually severe fit of coughing, a small dark object, which she immediately removed, and presented to me on my next visit a few hours thereafter. The object thus handed to me possessed the same offensive odour as the expectoration and breath of the patient, was sodden in character, and appeared to be a twig or minute branch of a shrub or tree. Retained for a short time, it became firm, and ultimately hard, and was then readily enough identified as a small twig of a thorn-bush (fig. 1). Almost immediate relief succeeded the discharge of this foreign body from the lung, and the patient made a rapid as well as complete recovery. When I examined him some months after the illness now briefly narrated, and some little time after he had resumed his old occupation, I could discover very little wrong with his chest; a degree of dulness on percussion, and feebleness of respiration, alone indicated the site of his very serious lung disease. The narrative would be incomplete without the statement made to me by the patient, after the discovery of the "corpus delicti" in the sputa. He called to remembrance the sudden occurrence of a violent fit of coughing and choking, which was produced by something entering his mouth and passing downwards, when he was riding pretty rapidly through a dense wood in Aberdeenshire, with the wind in his face. This happened nearly six months before the commencement of the illness for which he requested the attendance of Dr Rutherfoord Turnbull.

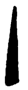

FIG. 1.

It may naturally be asked how the notion of the disease in this case, being dependent on the presence of a foreign body in the lungs, suggested itself to my mind? So interrogated, I have to reply, that there appeared to me something unusual in the whole history of this man's illness. The symptoms did not indicate the original occurrence of pneumonia which had terminated in gangrenous abscess, while the previous healthy condition of the patient, and the entire freedom of the left lung, and no inconsiderable portion of the right, from disease of any kind, made it evident that he laboured under no constitutional dyscrasia, of which the lung disorder was the prominent local manifestation. Further, I was from the first impressed with the very peculiar odour of the breath and expectoration. That differed from the strong and disagreeable smell attaching to both in ordinary pulmonary gangrene, and at the same time irresistibly reminded me of the odour which I had perceived in a case of pulmonary gangrene caused by the presence of a chicken-bone in the lung, under Dr Bennett's care in the Royal Infirmary in 1848, and of which a very interesting narrative has been published by Dr Struthers of

Leith.[1] Small as the foreign body in the case now narrated was, there are instances on record in which bodies equally minute entering the bronchi have given rise to alarming symptoms. Our late lamented friend, Dr James Duncan, in his interesting probationary essay for the Royal College of Surgeons, on "Foreign Bodies in the Air-passages,"[2] mentions one which occurred to Dr Donaldson of Ayr, in which an ear of grass entering gave rise to intense bronchitis, which continued for seven weeks, when the body was expectorated, and the person recovered.

The preceding observations appear to me to warrant the following conclusions:—(1.) That turpentine is a powerful stimulant, capable of rousing in a very remarkable manner the vital energies, while it, at the same time, produces a soothing influence on the nervous system. (2.) That, in all probability, we possess in turpentine an antiseptic agent, powerful in arresting, it may be in preventing, those morbid changes in the system which are evidently of a septic nature.

The other actions and uses of turpentine—its cathartic, anthel-

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[1] Edinburgh Monthly Journal of Medical Science, 1852, p. 449.

[2] Op. cit., p. 14.

Note.—The portion of mutton-bone (fig. 2) which is now exhibited to the Society was expectorated by a lady, a patient of Dr Struthers, to whose kindness I owe the opportunity of referring to it. In November 1869, this lady, while taking mutton-soup at dinner, and being at the same time engaged in speaking to her niece, a little girl, suddenly choked. The disagreeable and painful sensation then excited lasted for fully fifteen minutes, and gradually subsided, leaving her, however, satisfied that a piece of bone had entered the windpipe. On the Tuesday following the Sunday on which the accident took place, the voice became husky, and cough occurred. These symptoms, however, after the lapse of a few days, passed away, but she became subject to attacks of difficulty in breathing, some of which were very severe in character. They occurred at intervals, which rarely exceeded ten days. After some months she became weak, and the cough, which had returned, proved very irritating, and was attended by a scanty expectoration of phlegm. She had consulted medical men in different parts of the country, who regarded her case as one of ordinary bronchial disturbance, and listened incredulously to the tale of the choking fit and passage downwards of the bone. From Dr Struthers, for reasons of her own, she had purposely concealed all knowledge of the accident. Under his advice, she had, in the summer of 1870, gone to Crieff, and there, being seized with a severe fit of coughing, had brought up the portion of bone. For some days before this took place, she had observed her breath to be very offensive, and likewise the expectoration, which had then greatly increased in quantity. Dr Gairdner of Crieff, who had visited this lady when suffering from the severe spasmodic difficulty of breathing which preceded the discharge of the bone, had prescribed some medicine, which she believed to have facilitated its exit. Dr Struthers has informed me that, on careful examination of the chest, he had detected a roughness of the respiratory murmur, accompanied by wheezing sound, a little below the right sternal clavicular articulation. On the 26th of May 1871, ten months from the happy event just recorded, I had the opportunity of seeing the patient with Dr Struthers, and, on examination, failed to discover any evidence whatever of pulmonary affection; her recovery, which was rapid, had evidently also been complete.

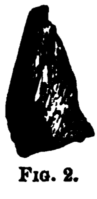

FIG. 2.

mintic, and hæmostatic virtues, have already been signalized, and I need not again refer to them here.

I am specially anxious to insist on the action turpentine possesses on the nervous system, by which it is rendered a powerful remedy in fevers of the adynamic type, in neuralgia, and not unlikely also in certain cerebral affections, including those of an inflammatory character; also on its antiseptic action, as evidenced by its remarkable influence on pulmonary gangrene and bronchial abscess. It appears to me as not improbable that pyæmia may be favourably influenced by turpentine, and that in this way its action in some cases of puerperal fever may be explained.

I am sanguine enough to believe that, in some cases of diphtheria and of putrid sore throat, we possess an available remedy in turpentine; and already I have seen it employed in the former, not, however, under circumstances which would justify me in drawing at the present time any decided conclusions from its use.

Part Second.

REVIEWS.

Lectures on Surgery. Parts III. and IV. By JAMES SPENCE, F.R.S.E., etc. Edinburgh: A. and C. Black.

THE third and fourth parts of Professor Spence's Lectures on Surgery have been published, so that the work is complete; and it gives us much pleasure to state, now that the whole scope of the undertaking can be reviewed, that our early favourable impressions, from perusal of the first two parts, have been confirmed, and our anticipations of still more valuable subject-matter being found in the remainder of the work, have been more than realized.

Parts III. and IV. are devoted entirely to the consideration of special operations and regional surgery; and here the learned Professor is manifestly not only at home, but seeming to revel in the practical magnitude of his theme.

It may be safely said, that though he has not rendered himself especially distinguished by devising any startling novelties in surgical practice, he has selected all that were useful from the teeming literature of past and present times, and modified and adapted them so as to bring them to perfection. The reasons for making such changes have been thoughtfully and philosophically argued, and leave a strong impression on the mind that, by following out the courses indicated, it will be best for the patient and the credit of the surgeon.

Where all is good, it is not difficult to select for special illustration some of the leading subjects so admirably treated by Professor Spence, and we would draw particular attention to his observations on tracheotomy in croup. We fancy no surgeon of the present day has had such extensive experience of this disease; and if he always acted on the rules for operating which he lays down in his book, he has been peculiarly fortunate in saving the lives of about a third of those who underwent the operation. To have saved thirty out of ninety subjected to tracheotomy for impending suffocation in diphtheria and croup, is a result of which Mr Spence may well be deemed worthy of congratulation; and it is evident, from what he tells us of the symptoms of gradual and certain asphyxia which demand the operation, that those thirty lives were snatched from an inevitable and most painful death.

Numerous methods for amputating at the shoulder-joint have been devised, and we propose quoting from Part III., page 800, the favourite and original method of Professor Spence, as it will be an excellent exemplification of the ingenuity, assisted by great anatomical knowledge, with which he modifies so as to bring to perfection various operations. Having seen the excellent stumps which resulted from this plan of procedure, we are the more disposed to speak in its favour. He says, "Supposing the right arm to be the subject of amputation. The arm being slightly abducted, and the head of the humerus rotated outwards, with a broad strong bistoury I cut down upon the inner aspect of the head of the humerus, immediately external to the coracoid process, and carry the incision down through the clavicular fibres of the deltoid and pectoralis major muscles, till I reach the humeral attachment of the latter muscle, which I divide. I then with a gentle curve carry my incision across and fairly through the lower fibres of the deltoid towards, but not through, the posterior border of the axilla. Unless the textures be much torn, I next mark out the line of the lower part of the inner section by carrying an incision, through the *skin and fat only*, from the point where my straight incision terminated, across the inside of the arm, to meet the incision at the outer part. This ensures accuracy in the line of union, but is not essential. . . .

"The advantages I claim for this plan are,—1st. The fulness and better form of the stump left after the healing, as shown in the results. 2d. The posterior circumflex artery is not divided except in its small terminal branches in front; whereas, both in the large deltoid flap and the double-flap methods, the trunk of the vessel is divided in the early steps of the operation, and, retracting, often gives rise to embarrassing hæmorrhage. In the case of the deltoid single-flap method, the vitality of the flap must be seriously compromised, as it depends chiefly on that vessel for its arterial supply. 3d. The great ease with which disarticulation can be accomplished."

There is one desideratum which we would like to see rectified in subsequent editions of this excellent book; for though the objection may seem trivial, it is a source of much annoyance and irritation, not to find any description of the plates except what is at the beginning or end of the parts. The letterpress indeed seems to treat the plates with marked indifference. Throughout our reading we have rarely come upon any special allusion to the figures represented. This may not be particularly aggravating to the advanced surgeon, but to the student, who really requires his memory to be sharpened by sights of the various important structures he is reading about, it must be very embarrassing. We would suggest that in future editions either the plates themselves should have footnotes, or that an extra explanatory page be inserted opposite them.

We would say, in conclusion, that the Lectures on Surgery by Professor Spence are the valuable contributions to a most important science and art of one who had a most extensive field for observation, and who has brought a natural shrewdness and wariness of perception, to act in conjunction with unrivalled anatomical knowledge, in the production of a complete work of sound surgical instruction.

The Cell Doctrine: Its History and Present State. For the Use of Students in Medicine and Dentistry. Also a Copious Bibliography of the Subject. By JAMES TYSON, M.D., Lecturer on Microscopy in the University of Pennsylvania, and on Physiology in the Pennsylvania College of Dental Surgery, etc. With a coloured plate, and other Illustrations. Philadelphia: 1870.

THIS is a little book of 150 pages, of which 117 are taken up with a statement of the views of different microscopists on the cell theory, and the remainder with the bibliography of the subject. We do not know whether many more books or papers could be added, though some could be struck out. What is the use, for example, of swelling the list by the title of Cuvier's Leçons sur l'Anatomie Comparative, Paris, 1808? or Bichat's Anatomie Générale, Paris, 1801? Neither Cuvier nor Bichat expounded the cell theory in these famous works. One might just as well put in Lucretius de Rerum Natura, Rome, B.C. 60.

We have a very carefully prepared history of the growth of the cell theory, in which an attempt is made to discriminate the merits of Robert Brown, Schleiden, Schwann, and others.

The following passage may awaken some interest among our readers, referring to a man whose remarkable mental and moral endowments made so deep an impression on those who came in contact with him:—

"We think it proper, in a historical memoir of this kind, to refer to some severe critical remarks which appeared in the *Edin-*

burgh Medical Journal of February and April 1869, in which Prof. Virchow is accused of appropriating the observations of Prof. Goodsir as his own. That there are points in common will be recollected, and also that these are, *first*, the invariable origin of cells from previously existing cells; and, *second*, the division of the tissues into cell territories. Now, on the one hand, we deem that the dedication of Virchow's volume to Prof. Goodsir is as handsome an accredit as could possibly be given for whatever of common there may be in the writings of the two authors; and, on the other hand, we have seen that Martin Barry is acknowledged even by Goodsir to be the author of the 'first consistent account of the development of cells from a parent centre.' The idea of *cell territories* seems, however, to have originated with Goodsir; nor do we believe, for the reason stated, that Virchow intended to usurp his prerogative. The merit of Virchow consists in his application by actual demonstration of the first of these points to so large a variety of physiological and pathological processes; to which is added original conception in the prominence given to the connective tissue corpuscle and the canalicular system, whatever may be the truth with regard to either."

The author gives a clear and interesting account of the views of the German and French histologists, as of the English physicists like Huxley, Grove, and Tyndal. The author shows a great deal of reading, as well as a praiseworthy desire to do justice to the opinions he explains. The number of references is very large. The printer must have taken in a good stock of stars and daggers before he went to press.

Dr Tyson allows only ten pages to his own views, which in the main correspond with those of Dr Beale. He believes the cell to be the ultimate anatomical element of organization, and that it is composed of matter in two states. The one state is found in the centre, often grouped into an oval nucleus, and to it, with Dr Beale, he gives the name of germinal matter. This germinal matter may occur without taking the form of a nucleus, as in the "non-nucleated amœbæ and protogenes primordiales of Haeckel, the non-nucleated monads of Cienkowsky, and in the leaf of Sphagnum, in such algæ as Hydrodictyon, Vaucheria, and Caulerpa, and in young germinating ferns" (p. 115). This germinal matter is often structureless, but sometimes it is granular. The peripheral portion of the cell is called formed matter. It has not the property of multiplying itself. "It is, in fact, the portion of the cell in which alone function resides, since it is to the formed material of the muscle-cell that we owe the property of contractility; to the formed material of the nervous element that we are indebted for neurility; and to the formed matter of the epithelial cell that we owe its protective qualities; while the secretion of all glands, whether they subserve ulterior purpose or not, is the formed material of the respective gland-cells." The reproductive power of the cell exists in the germinal matter, the function in the formed material. Sometimes the formed material is structureless; sometimes, as in the striped sarcous matter of muscle, it has a well-marked structure. These two materials occur in varying proportion in different cells.

Dr Tyson does not wish to give up the old term, *vital force*. As Dr Alison used to say, "We know as much of vital forces as of any other." We talk of the forces of gravitation and electricity, nor can we prove that these are identical, and in the same way we have a right to speak of vitality. Prof. Huxley wants to call vital phenomena the properties of protoplasm, and the thoughts to which we give utterance, the expression of molecular changes in protoplasm. This is more easily assumed than proved. Huxley objects, that we have no more right to say that such changes take place through the guidance of a principle of vitality, any more than that the phenomena of water take place by aquosity. But then we can reduce the phenomena of water to certain properties shared in different degrees by the whole inanimate world. When we observe properties different from those of ordinary matter, we attribute them to a peculiar force, as long as we cannot resolve them into a general one. We say that sealing-wax when rubbed shows electrical forces or electricity, not cerous forces or cerosity. In the same way the living cell presents phenomena not shared by the inanimate world, and we have as much right to call these vital forces as Huxley has to call them molecular forces. When it is proved that all these are modifications of one force, that gravitation is but another form of electricity, and consciousness or reproduction due to the same force as gravitation or electricity, we shall perhaps adopt a more materialistic nomenclature. In the following passage this point is well stated:—"That there is something in this force or power, over and above the physical forces of nature, is most strikingly shown in the power, exhibited through its agency by germinal matter, of multiplying and producing new germinal matter out of pabulum unlike itself; for although a crystal may result from the re-arrangement of particles of a salt in solution, as sulphate of alumina, to an unlimited extent, there is no possibility, nor would any physicist contend, that it could produce crystals of its own composition out of carbonate of soda. Nor, as is justly contended by Dr Beale, should the cell be compared to a machine, unless that machine possess a power of producing new machines out of material unlike itself, and of endowing them with a similar power."

The Principles and Practice of Midwifery, with some of the Diseases of Women. By ALEXANDER MILNE, M.D., etc., etc. Livingstone, Edinburgh: 1871.

THERE have been many poets in the profession; but most, so far as we remember, have been exoteric. Among the esoteric medical poets is the well-known Citoyen Sacombe, who in "an vii." published "La Luciniade, Poëme en dix chants, sur l'Art des Accouchemens." Sacombe founded the anti-cæsarean school of obstetrics, had a fierce quarrel with Dubois and Baudelocque, and altogether played a queer part in the political and scientific world of his day. He suffered imprisonment at the hands of Napoleon, got his freedom at the Restoration, and died in 1822, his works already almost forgotten.

Dr Milne's work is remarkable for its literary peculiarities. He writes with an easy pen, intersperses his drier scientific matter with odd digressions, and also with snatches of poetry. Here, for instance, is a specimen of his verses, and also of a practice which is scarcely worthy of the intended honour:—

> " If to the mother *you* the chlorate give,
> The child more certainly will thrive and live."

Here is a general principle of therapeutics:—

> " Try first the mild, then the more potent plan;
> Cure we may not, but oft appease we can."

Here is the function of the Fallopian tube described in verse:—

> " Like bird of rapine, ever on the watch,
> Rarely it fails the ovulum to catch,
> But if the little embryo it spills,
> We have an extrauterine case, with its sad ills."

Here he settles the great blood-letting question, in connexion with the treatment of puerperal peritonitis:—

> " Our worthy sires bled rather fast,
> And now we let the lancet rust;
> But if to one extreme they ran,
> Have we not to the other gone?"

We must rest satisfied with these quotations of our author's poetry, and leave it to our readers to judge of their literary merits, having ourselves no skill in the poet's art.

Dr Milne is evidently of the Edinburgh School, and we trust this will nowhere be held as to his discredit. Though this is his home, he dedicates his book to Scanzoni, and evinces, in a variety of places, some degree of acquaintance with the rich obstetric literature of Germany.

His book has a remarkable peculiarity, which is not convenient. It is his mixture of some of the diseases of women, or, in modern nomenclature, some parts of gynækology, with obstetrics. This mixture appears very like confusion, for, in truth, the things do not amalgamate at all. Had he given all, or most of, the diseases of women, it would have been another matter.

We ardently wish that we could foresee a time when obstetrics might be taught in verse. The science must wait long before it can be set to music. There are too many discords, too many gaps, in the obstetrical scale at present. Obstetricians only waste time when they try to write a Luciniade. Laborious, often painful and long-continued observations, and then other means of philosophizing, are the true occupation of those who wish to advance this study. Above all things, they must not set out in search of practical results. They must remember that it is necessary to know, before it is possible satisfactorily to treat. Exactness of knowledge, then, must precede satisfactoriness of treatment. And we may ask our brethren, Where, in midwifery, can we even now say we have exactness of knowledge? We are accumulating stores, however, and Dr Milne has, in this work, made some contributions to them.

On the Pathology of Club-Foot and other Allied Affections. By JAMES HARDIE, M.D., Surgeon to the Clinical Hospital, Manchester.

WE have studied with much interest this suggestive essay, and consider it to be a valuable addition to the pathology of Club-foot.

The author's observations are founded on the examination and dissection of a curious malformation affecting both the upper and lower extremities of an infant. Having described this case, and referred to the theories which have been given to explain the cause of congenital club-foot, Dr Hardie advances "arrest of development" as the most probable source of such deformities. In order to explain the author's use of this term, we quote the following passage:—

> "By 'arrest of development,' I do not mean that the muscles and other structures on the contracted side of the joints have at some period ceased to grow, and have remained of a lower grade of development, or have possibly undergone a degeneration of structure. Dissection of the parts sufficiently disproves any such hypothesis. We find the muscles, ligaments, and surrounding tissue exactly of the same structure as in the normal condition. The only difference that can be perceived is that they are formed on a smaller scale than they should have been, and if, by the term 'arrest of development' some have understood the former condition as existing, I can at once agree with Adams and others in regarding it as a myth. But if, by the term, we signify only what every one admits—structural shortening—and then go back and substitute one kind of nervous influence for another as the cause of this,—the influence, namely, of some peculiar perversion of the excito-nutrient system of the mother for some peculiar irritation of the nervous centres of the fœtus, as is the supposition necessary in the former theory,—then I see nothing in the anatomy of the parts nor in the reasoning to warrant the complete rejection of this theory, which it has of late years received."

The author supports his views by reference to the association of club-foot with other deformities, to the occasional hereditary nature of club-foot, and to what, in our opinion, is the most valuable, the important investigations of Eschricht and Volckmann in regard to the development of the fœtus. In connexion with the practical bearing of these observations on the treatment of club-foot, Dr Hardie remarks:—

"The bearing of this explanation of the cause of club-foot on its treatment is sufficiently obvious. Admitting its correctness, it is evident that not the muscles only, but the bones and ligaments are also involved in the abnormal condition from the first. Too much reliance, therefore, must not be placed on the efficiency of tenotomy. Surgeons believing in the muscles as the original cause of the mischief, and trusting too much to the relieving of the tension they exhibit, are sure of disappointment. We may infer, in a most intelligible manner, that tenotomy should only be regarded as a preliminary to treatment that has for its object the retaining of the joints in their normal position, for a period sufficiently long to allow of the bones and other structures growing into the shape that this encourages. In many cases this period must necessarily be very protracted, but considerable time may also often be saved by extending the use of the tenotome as much as possible to all the contracted tissues."

Chloroform Deaths. By W. W. Dawson, M.D., Surgeon to Cincinnati Hospital.

This little pamphlet, which contains the history of twelve hitherto unpublished cases of death from chloroform, is tolerably exhaustive of the subject, so far as it is yet known. It compares chloroform with other anæsthetics, and discusses the rate and cause of death, with the best modes of administration, and the best means of resuscitation. Quoting from an anonymous paper in the *Richmond and Louisville Medical Journal*, the author gives the following table, exhibiting the relative dangers from anæsthesia by chloroform, ether, etc., from the statistics of 208,893 cases :—

Sulphuric ether, ...	1 death to	23,204	administrations.
Chloroform, ...	1 ,,	2,723	,,
Mixed chloroform and ether,	1 ,,	6,588	,,
Bichloride of methylene, .	1 ,,	7,000	,,
Nitrous oxide gas, . . .	No deaths in	75,000	,,

These startling figures he believes to be too favourable for ether and nitrous oxide, while he thinks they hardly sufficiently present the fatality of chloroform. We certainly agree with the first part of this statement, but we as certainly demur to the last. One firm alone (Messrs Duncan, Flockhart, and Co., of Edinburgh) manufacture 1700 fluid ounces of chloroform daily. Now, setting aside one half for external use—surely an ample allowance—and allowing two fluid ounces as an average individual dose, which we think is fair, taking dentistry at one end of the scale and midwifery at the other, then we have this one firm manufacturing 425 doses daily; and taking 300 days as a working year, which of course is below the reality, we have them making 127,500 doses annually; and taking only one death in 3000, which, according to Dr Dawson, is far below the actual fatality from chloroform, then we have the chloroform produced by this one firm alone responsible for no fewer than 42 deaths annually. But chloroform is produced by other manufacturers in large quantities—80,000 lbs. annually in America alone; and though all chloroform deaths may not be recorded, yet, from the circumstances in which they usually happen, and their appalling character, but few can escape altogether unnoted; and yet, all told, do they amount to anything like 50 annually? It is quite true that Dr Richardson tells us that certain hospitals lose 1 case out of 2633 cases; so much the worse for those hospitals, say we; how much the worse may be learned from the fact that he tells us, that in certain other hospitals the deaths during the first few years amounted to the mere nominal mortality of 1 in 17,000 administrations, but that during the last few years the mortality in the same hospitals had increased to 1 in 1250 administrations. Suppose, in drawing lottery tickets, 17,000 blanks were drawn to one prize, and afterwards one prize to every 1250 blanks, would the public be satisfied that all was fair, and had been properly managed? Now, suppose they discovered that the one who drew the tickets had a number of prizes in his coat-sleeve, would they not insist that, whether wilfully or not, he had latterly been dropping his prize tickets into the bag out of his sleeve, and thus had increased their number greatly beyond the original intentions of the holders of the lottery? Events are always dependent on the causes which produce them, and chance, or accident, is but another name for our ignorance of those causes. A particle of dust floats at hazard, as we say, and yet La Place has shown that the curve described by it is regulated with as much certainty as the orbits of the planets themselves; and nothing but wilful ignorance could ever induce the members of a profession, which, by skill and care, has reduced the deaths from ovariotomy to about 1 in 30, instead of an almost invariable fatality, to assume that chance, accident, or any similar inscrutable umbra, should be responsible for so fearful an increase of mortality from chloroform as from 1 in 17,000 to 1 in 1250.[1]

Demurring to the larger number of deaths as certainly far in excess of what ought to result from the careful administration of chloroform, we may add that, even of the mere nominal mortality of 1 in 17,000, it is at least probable that all was not due to chloroform, for we know that sudden deaths during, or immediately after, operations were by no means unknown before the days of chloroform; and although it is probably impossible now to collect adequate data to fix their probable frequency, yet some approximation may be gained when we learn that during the first seven years after the introduction of chloroform, no fewer than five such deaths came under the immediate cognisance of Sir James Simpson himself.

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[1] The feeling that there is something to blame is not lessened when we reflect that in the French Eastern campaign, chloroform was administered 30,000 times, or more, without an accident; that in the English Eastern campaign, there were but two deaths, in an unknown, but much larger, number of administrations; and that, during the late American war, no accident occurred in 22,000 administrations of good English chloroform; subsequently, however, when the same surgeons were supplied with chloroform made from methylated spirit, several accidents occurred, although the same care and skill were employed. Vide *New York Medical Journal*, April 1871, pp. 407, 408.

It is somewhat remarkable that almost all the deaths from chloroform, so far as we know, have occurred when it was administered for some surgical operation, and that no deaths have been recorded as resulting from its legitimate use in midwifery.[1] Yet the parturient state itself presents no insuperable obstacle to chloroform-poisoning, for cases are known in which women have been poisoned while in labour by chloroform administered to them by non-professional parties, and the great reason of its safety under ordinary circumstances would seem to be that we have, in the action of chloroform on the uterine pains, a most efficient test of the saturation of the patient's system; for, as the heart's action remains unaffected long after the suspension of the uterine pains by anæsthetics, and as the slightest interference with these pains is the signal for the withdrawal of the chloroform, we have thereby established an almost complete immunity from sudden death from chloroform during labour. Could we discover some similar and equally efficient physiological test which could be employed during operations, a great step would be made to securing the safe administration of chloroform. Crying out, not conscious speaking, but mere crying, might be tried as such a test, for consciousness we know to be abolished long before the reflex act of crying ceases—a rabbit continuing to cry when pinched after its cerebrum has been entirely removed. Safety to our patients would be cheaply purchased by a little more noise in our operating theatres, in which the desire to keep the patients quiet and motionless has only too often resulted in their eternal rest. And yet there might be risk even in this test; because, unfortunately, screaming is not confined merely to the borderland immediately beyond unconsciousness, and we know that many distressing deaths have occurred apparently from the patient not having been sufficiently anæsthetized, probably from reflex spasm of the heart, as was pointed out long ago by Mr Bickersteth. A very remarkable instance of this is related by Dr Dawson. The patient was a lady aged thirty-nine, the mother of eight or nine children, who had taken chloroform in all her labours, and in her first had been under its positive influence for twelve hours; she had also frequently taken it for the extraction of teeth; and yet at last she died in the act of getting a tooth extracted, while only partially under the influence of chloroform, of which she had only inhaled about one drachm.

In spite of the risk involved in the use of chloroform, its great potency, prompt action, and the ease with which anæsthesia can be kept up by its aid for hours, will always constitute it the great favourite with the majority of the profession; indeed, in these respects, it has no rival but sulphuric ether, to which there are many objections, while there is every reason to fear that, were it equally freely and carelessly administered as chloroform, the deaths from the one would not be much, if any, behind those of the other. In 1867, a death from ether occurred at Lyons, and on discussing this death at the Academy of Medicine there, it was found that in the short period—a few months—during which the medical men of Lyons had given up chloroform and employed ether, no fewer than seven deaths had occurred, while the same figure expressed the total number of deaths from chloroform in Paris during fourteen years. Our author relates several other cases of death from ether, and holds out no very flattering inducements to return to ether.

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[1] Forty thousand such cases without a death have been recorded in London alone.

Nitrous oxide, of course, is only admissible for short operations, such as tooth extraction; but for these it seems to be by far the safest agent, though by no means perfectly innocuous, at least one death being already on record.

Mixtures of chloroform and ether are vaunted by some as more free from danger than chloroform alone, but as they are mere mechanical mixtures, it would seem to be more rational to give them separately, producing the anæsthesia by ether, and keeping it up by chloroform, if there is any safety in the use of two distinct anæsthetics, which seems at least doubtful.

The other anæsthetics have been comparatively but rarely tried, but the only death as yet recorded from the bichloride of methylene was a man of forty, and in vigorous health.

Dr Dawson includes all deaths from chloroform under the three heads of sudden, gradual, and secondary. The first category comprises, of course, by far the larger proportion—those who have a fair pulse and steady respiration up to the very instant that both cease. The second includes those few cases in which the heart and lungs show feebleness of action, then cease to act and again resume, arrest and resumption of these vital functions alternating sometimes for minutes and sometimes for hours before the patient's death. While, as an example of what he terms secondary death from chloroform, he gives the case of a patient who, when roused from the complete anæsthesia, "at once resumed the vomiting which had been inaugurated by the first inhalation of the vapour, and which terminated her life on the sixth day;" this case being precisely one of those which would come under the category of chronic chloroform-poisoning, in which Casper includes all those who die apparently from the effects of chloroform after the lapse of hours, days, or weeks. As to the cause of death, the author recognises the heart as the organ most frequently smitten; in the vast majority of cases the heart is fatally paralyzed; but in some, of which he gives one remarkable instance, and mentions others, the heart seems stimulated to a fatal unrelenting contraction. In the case narrated the heart was empty, firmly contracted, and fatty; the patient (Bridget Henry) had gone easily over, and had been fully anæsthetized for one minute and a half before she died; only 75 minims of chloroform were used.

The lungs are the organs next in frequency fatally impressed, the poison acting directly on the pneumogastric nerves, and paralyzing them. In these cases the respiration ceases primarily, the heart continuing its action for a limited time. This form of disturbance in a minor degree is not unfrequently observed and rallied from by artificial respiration. The stomach, in some few cases, seems to be fatally affected, vomiting and retching ceasing only with the life of the patient; this is a common enough form of derangement after the administration of chloroform, but it only very rarely proves fatal. Dr Dawson also refers to the falling back of the tongue, favoured by the supine posture, as a source of death from apnœa; nothing but the grossest carelessness could account for this, and such deaths must be extremely rare. He also mentions death from coma, from an over-dose; such a mode of death must also be rare, and actual death probably occurs from a combination of various causes. No instances are given either of this or the preceding form of chloroform-poisoning.

In answer to the inquiry, What can be done to prevent these deaths? the author goes on to show that, from so many chloroform post-mortems having revealed fatty degeneration of the cardiac muscle, all authors on the subject exclude persons with a fatty heart, nevertheless, he adds, practitioners give them chloroform. For who can diagnose a fatty heart? Bridget Henry was plump, and had fat in abundance; she had a regular pulse, of fair force and volume, and a normal cardiac impulse; yet the post-mortem showed a fatty heart, which had not even been suspected, though carefully looked for. Moreover, we have considerable doubts whether all the chloroform hearts, said to have been fatty, have been so in an actually morbid degree; anxiety to shield themselves from the charge of carelessness, even more perhaps than their desire to defend the use of the drug, has led those who have been unfortunate to seek an excuse for the death in pathological alterations. Such an excuse seems to us problematical in the extreme; hundreds of hearts far more fatty, far more diseased in every way than those of the few unfortunates, have borne with impunity a moderate and even a considerable infusion of chloroform vapour. For the relief of cardiac pain, so common in heart disease, especially in aortic regurgitation, the inhalation of chloroform is a readily available form of relief, preferred by some to the nitrate of amyl or the subcutaneous injection of morphia, and it is not found to be a bit more dangerous or injurious than they are. In cardiac asthma, chloroform often rallies the apparently dying patient; and in the last case of angina pectoris we have seen, the only relief from pain the patient had for weeks before her death was got from chloroform inhalations, supplemented by hypodermic morphia injections. She died worn out at last at about eighty years of age, and at her post-mortem the orifice of the middle coronary artery—there were three in her heart—was found almost entirely blocked up by atheromatous deposit, and her heart not only thin-walled and somewhat dilated, but of a pale, almost yellowish tint, soft, and thoroughly fatty—no heart could be more so; yet chloroform produced in her no dangerous symptoms, and, far from shortening her days, certainly prolonged them.

After a careful inquiry into all the cases in which chloroform is said to be contraindicated, our author concludes that we can only decline persons labouring under a dilated right heart, and those ill of delirium tremens; but a dilated right heart being probably quite as difficult to diagnose as a fatty one, practically only those labouring under delirium tremens are to be excluded from the benefits of chloroform. The author also very properly adds, that much may be done to secure the safety of the patient by placing him in the recumbent position, by never giving the chloroform except on an empty stomach, three to four hours after a meal, by attending to the temperature of the room, and the proper administration of the vapour. He approves of giving spirits before the administration of chloroform in every case, as it encourages the strong and strengthens the weak; but he does not approve of employing subcutaneous injections of morphia, as recommended by Claude Bernard, to be employed in those having feeble hearts and in the habitually intemperate; and he does so mainly because, on the faith of one or two fatal cases reported, he regards it as almost equally potent for evil with the chloroform. This argument is not likely to have much weight. Hypodermic injections of morphia have also been recommended as preventive of sickness; but unless from some homœopathic principle, we cannot see how, as so used, morphia is perhaps even more frequently followed by sickness than chloroform. In regard to the manner in which chloroform should be administered, Dr Dawson remarks "that, although for the last few years the tendency has been to great dilution of the vapour by the means of apparatus, as essential to safety, yet the deaths seem to have been on the increase, and I doubt whether there is advantage in any of these appliances. It appears folly to talk about the positive safety of dilution when a vapour of from 3 to 4 per cent. kills, and kills in the same manner that chloroform pure, unmixed with air, does. Mrs Simmons, the second victim of chloroform (Cincinnati, 23d February 1848), who inhaled pure chloroform from Morton's inhaler, seems to have died in precisely the same way as did those who have perished under Snow's apparatus." The old-fashioned towel method, as employed in the United States army, has, he states, out of 80,000 administrations, been credited with only eight deaths. On the whole, however, the only point which he seems disposed thoroughly to insist on is, that the anæsthesia should be produced slowly; he seems to think that all observers are agreed on this—most are; but the present Professor Simpson of Edinburgh, and Dr Murray of Newcastle, seem to think that the patient can scarcely be brought too rapidly under the influence of chloroform; and our impression is that the late Sir James Simpson held similar views. In regard to the question, How far may the chloroform narcosis be carried?—by which he evidently means how long may it safely be kept up—he says that this is a most difficult question, as some die in an instant, while others sleep quietly for hours, and awake refreshed, and that it is not easy to get rid of the idea that there are some persons, and some states of the system, inimical to anæsthetics, else why should healthy, and comparatively healthy, persons die, and die under apparently the most careful and skilful administration? As to the means of resuscitation, the author declares artificial respiration to be the only reliable means; and in so saying he shuts out as hopeless all those whose hearts are primarily paralyzed. Of course he very wisely scouts the idea of stimulants applied to the face, skin, or rectum being useful where the knife and the cautery are unfelt; though such means may be useful when dangerous symptoms exhibit themselves while anæsthesia has scarcely commenced. As to the employment of electricity, he says that the statements of Onimus and Legros as to the employment of the continuous current, and the inutility of the interrupted current, are directly contradicted by the experiments of the Royal Medical and Chirurgical Society, and of Dr H. Culbertson, Ohio, who found the interrupted current perfectly efficient in restoring animation after anæsthetic suspension of the heart's action; so that the question of interrupted *versus* continuous current would seem to be *adhuc sub judice*. In conclusion, if we learn nothing else from this pamphlet, we learn this, that the most careful observers have had their reasoning faculties so paralyzed by contact with this subject as to believe that a rise of mortality from 1 in 17,000 to 1 in 1250 in a matter which depends so much on care and skill, may yet be due to some inscrutable idiosyncrasy, revealed by no external symptoms, and frequently associated with the highest health. It is as reasonable to suppose that arsenic or prussic acid kill only when their use is coincident with an idiosyncrasy. And the first step in the right direction will be to ignore the compassionate verdicts of ignorant juries, which invariably declare the administration to have been faultless, and to state boldly, with Mr Lister, that "just as railway accidents are generally occasioned by culpable mismanagement, so death from chloroform is almost invariably due to faulty administration." We have already, from the statistics of our great Scotch manufacturers, shown the high improbability that the deaths in Britain generally amount to so many as 1 to every 3000 administrations.[1] And Dr Squibb, in the May number of the *New York Medical Journal*, corroborates this, for he says that, in the United States, he finds last year only 17 deaths reported to 208,000 administrations, or 1 in 11,764; these administrations he calculates from the 80,000 lbs. of chloroform annually manufactured, by taking one-third as used for inhalation, and one ounce and a half for a dose. Possibly enough his calculations, as well as our own, may be erroneous; but coupled with the statistics of Dr Richardson, already referred to, they go to confirm the deliberate statement of Mr Lister, just quoted,—a statement which we must however supplement by another, and that is, that we do not—and we are also certain that Mr Lister does not—by "faulty," mean "culpable."

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[1] At that rate the deaths must have amounted to over 462 in eleven years, but the *British Medical Journal* for 24th June states that only seventy deaths have been recorded during eleven years, and that these comprise most of the chloroform deaths during that time, though certainly not all.

Report of the Vaccination Committee—Illuminated. By WILLIAM HUME-ROTHEBY.

WE have read this Illuminated Report, and wishing to let the public and the author know our opinion of it, and, at the same time, to keep clear as far as possible of all disagreeables, we think it wise merely to say that the author is an anti-vaccinator, and in regard to all such we quite agree with the following quotation from the *Spectator*:—"A rough remark in our last issue has brought down on our heads a storm of objurgations. We said that vaccination was decried by two or three scoundrels and a good many fools, whereupon we are asked whether we class Mr Newman among the scoundrels, or the late Dr Bedford among the fools; what we mean by publishing such falsehoods; why we are deluding the people; and all manner of amenities. The letters we could stand up against, but the deluge of tracts is too much; and so we give in, the more readily because the expression was inartistic. We beg, therefore, to declare that people who denounce vaccination in order to sell nostrums are not scoundrels, but only persons who risk human lives for gain; and that people who denounce vaccination from philanthropic motives are not fools, but only persons devoid of the faculty of weighing evidence."

Patents and Patentees: Victoria. Vol. I., from 1854 to 1866. Vol. II., 1867. Vol. III., 1868.
Abstracts of Specification of Patents applied for from 1854 *to* 1866: Victoria. Ac to Ba.
Abstracts of English and Colonial Patent Specifications relating to the Preservation of Food, etc. By WILLIAM HENRY ARCHER, Registrar-General of Victoria. Melbourne: 1870.

THESE interesting records are of course insusceptible of being reviewed in the short space we could allow, and we merely mention their titles to say that they have been placed in the library of the Royal College of Physicians, where those interested may consult them.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION L.—MEETING XII.

Wednesday, 7th June 1871.—Dr BENNETT, *President*, in the Chair.

I. *Professor Lister* made an oral communication in connexion with three cases which he exhibited. The first was an example of A HAND with all its natural movements, and of full strength, after excision of the wrist for caries. The second was an illustration of a new principle of treatment of CERTAIN DEFORMITIES resulting from contracted cicatrices, and also of the antiseptic management of the wound. The third was an instance of recovery after PRIMARY AMPUTATION AT THE HIP-JOINT, promoted, as it was believed, by antiseptic management, the difficulties of which, under such circumstances, had been overcome by the use of the means exhibited. [This communication will appear in full in our next number.]

II. *Mr Annandale* showed a LITTLE GIRL, nine years of age, who had been under his care for two months, on account of aggravated congenital talipes varus of both feet. He exhibited casts of the feet taken before any treatment had been adopted, and pointed out the satisfactory results which had been obtained by the employment of the means which he had recommended at a late meeting of the Society.

III. *Mr Annandale* also showed a BOY, illustrating an example of conservative surgery of the hand.

IV. *Dr Fraser* exhibited a QUANTITY OF WATER from the newly-discovered acidulous chalybeate spring of St Dunstan, Melrose, for the opportunity of showing which he was indebted to the kindness of Mr Dewar, Demonstrator of Practical Chemistry in the University. The constitution of this water proved it to be at once a most admirable and a most agreeable ferruginous tonic, one which had probably no equal in Britain, and very few superior elsewhere. The following are its constituents per gallon, according to Mr Dewar's analysis :—

Carbonate of iron,	17·5	grs.
Alumina,	1·8	„
Silica,	8·5	„
Sulphate of magnesia,	7·8	„
Chloride of calcium,	16·	„
Carbonate of lime,	4·1	„
Other alkaline chlorides,	11·4	„
Total solids,	67·1	grs.

Carbonic acid, 40 cubic inches per gallon.

V. *Dr Miller* showed a PREPARATION OF THE CERVICAL COLUMN, WITH AN INJURY OF THE TWO UPPER VERTEBRÆ, caused by a fall on the feet. The atlas was dislocated backwards upon the axis, with rotation to the left side, and there was fracture of the left lamina of the latter bone. No injury to the base of the skull could be found. The tarsus in both feet was completely smashed up.

VI. *Dr Argyll Robertson* exhibited TWO EYES, one of which exhibited fatty degeneration of the retina, the result of albuminuric retinitis, while the other presented a very remarkable and interesting example of ossification of the choroid. The latter had been removed on account of sympathetic ophthalmia.

VII.. *Dr Warburton Begbie* then read his paper ON THE THERAPEUTIC ACTIONS AND USES OF TURPENTINE, which appears at p. 39 of our present Number.

Professor Lister remarked that some of the cases narrated possessed very great surgical interest, and were strikingly illustrative of the formidable results which frequently proceeded from the long-continued operation of trifling sources of irritation. This was specially remarkable in the case of foreign bodies in the air-passages, the symptoms of which, after the primary irritation had ceased, were at first of comparatively little consequence apparently, yet ere long severe cough set in, which ended in serious disorganization. A date-stone got stuck in the trachea of a child, where for a long period it produced no very important symptoms, yet the child ultimately died with its lung in a state of putrid disorganization. Again, a young lady, having an ear of grass in her mouth, accidentally drew it into her lungs; for some time she felt no inconvenience, but ultimately her cough became so severe, and her purulent expectoration so copious, that she was looked upon as dying of consumption, and her story of having inhaled an ear of grass was scouted as a pure imagination. At length, however, she expectorated this ear of grass, and completely recovered.

Dr Bennett remarked that, from the opinions of former writers, turpentine was alleged to be a valuable remedy, and useful in a vast variety of diseases, from fever to epilepsy, from mania to iritis, and from pneumonia to foreign bodies in the lungs. It was difficult to see what influence turpentine had over the latter class of cases. Such an extensive employment of this substance in diseases, varying so much in their character, was fitted to excite our distrust in it, and to raise a doubt how far it does relieve many of them. Copland was well known to have had unlimited faith in this drug, and he (Dr B.) had seen it employed on his recommendation in a case of chronic bronchitis affecting the larger tubes, but without the slightest benefit. Notwithstanding the many authorities quoted, from Hippocrates down to Graves and Cheyne, he failed to recognise in the paper any new facts or arguments that demonstrated more than was generally known as to the therapeutic properties of turpentine.

Dr Fraser said that this interesting paper had its interest increased by the reasons so ably adduced in opposition to the views contained in it. Though able, the reasons were not convincing; the varied character of the diseases in which turpentine was useful was no true argument against its utility. Its therapeutical value depended on its physiological action, and that was beneficial in counteracting various morbid phenomena which had a similar pathological substratum. Turpentine was believed by the modern school of therapeutics, by Gubler and others, to possess the power of producing contraction of the minute bloodvessels; this has not indeed been demonstrated, but its therapeutic action, in checking profuse mucous discharges and passive hæmorrhages, made it extremely probable.

Dr Smart said that he had for some time under his observation a man of middle age labouring under pulmonary abscess with very fetid discharge, and in this case repeated inhalations of turpentine had caused the disagreeable odour completely to disappear in twenty-four hours; while the patient was now sleeping better without narcotics than he did with their aid, previous to commencing these inhalations. In another case, he had also seen great relief to chronic laryngitis from the same remedy.

Dr Grainger Stewart said that he had listened with great pleasure to this valuable paper. He had found turpentine invariably of great service in intermittent hæmaturia, in doses of twenty drops every hour or two. In chronic bronchitis he had also found turpentine inhalation of great service, and the results were frequently most happy; but in ordinary fetid bronchitis, and in the fetid expectoration of bronchiectasis, he had found creosote inhalations of most benefit. He would be glad to know from Dr Begbie in what forms of kidney disease the violaceous odour from turpentine was found to be absent—in diseases of the vessels or the tubules?

Dr Joseph Bell said, at least ten years ago, Mr Benjamin Bell had told him of the efficacy of turpentine given internally in checking hæmorrhage from gums, nostrils, etc., in those cases known as hæmorrhagic diathesis, in whom the blood appears to be deficient in coagulating power, and that since then he had invariably used it in such cases with good effect. He believed that such results were so far confirmatory of the theory advanced by Dr Fraser and others, that turpentine acts by its contractile effect on the lesser bloodvessels.

Professor Lister stated that in a case of obstinate hæmorrhage from the prostatic part of the urethra, he could not doubt the efficacy of turpentine.

Dr Bennett said that the mere cessation of hæmorrhage was no proof of the action of the remedy. You gave a patient five grains of sugar of lead, of tannic or of gallic acid, and what was absorbed mixed itself with the 25 or 30 lbs. of blood circulating in the vessels. Did it act on the ruptured vessel as a styptic? if so, it could only reach it in a state of infinitesimal dilution. Or was it supposed that this dilution contracted the vessels? if so, it had never been demonstrated; and what was the value of the assumption? It was not by wild speculation or mere opinion, but by exact research, that modern therapeutics were to be advanced.

Dr Fraser stated that the theoretical objection, that minute doses were incapable of producing the styptic action referred to, was completely overthrown by the actual results of the administration of small doses of ergotin, of bromide of potassium, and of atropia, all of which produced contraction of the small arteries throughout the whole system. There was nothing easier than to ascertain the truth of this statement; because we could not only ascertain the tension of the bloodvessels by means of the sphygmograph, but we could determine the exact changes in blood-pressure by experiments on animals with the kymograph, and even inspect ocularly the small arteries in the transparent parts of animals, as in the webs of frogs and the mesenteries of the higher animals, where they could not only be seen, but measured, as had been done by Stricker, Burdon Sanderson, and many others. It was quite unnecessary to suppose that contraction of the bloodvessels can be produced only by the direct contact of the substance, as changes in the calibre of these vessels can be induced through the nervous system, and, therefore, by an influence exerted by the substance on the vascular nerve-centres.

Dr Bennett—But Dr Fraser had admitted that the theory of Gubler, as to turpentine, had *not* been demonstrated. Now, if the fact was so easy to ascertain as was alleged, would it not be better for therapeutists to experiment for it, and theorize afterwards?

Dr Joseph Bell stated that the special characteristic of the hæmorrhages to which he referred was that they did *not* tend to stop, but to go on indefinitely till the patient became excessively anæmic, and in some cases till the patient died. He referred to the monograph of Dr Wachsmuth[1] on the subject.

Dr Begbie congratulated himself on the conclusive manner in which the opinions he had advanced had been borne out by the experience of the Society, and he felt indebted to those who had added to the interest of his paper by supplementing it with so many interesting facts.

VIII. *Dr Begbie* then read A CASE OF INTESTINAL OBSTRUCTION from a knot on the lower part of the ilium, communicated by Dr Michael W. Taylor of Penrith, which will appear in our next number. This case was illustrated by a remarkably beautiful cast of the parts, made by Dr Taylor himself, which excited much admiration.

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[1] Die Bluterkrankheit. Carl Wachsmuth. Magdeburg, 1849.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXX.—MEETING X.

Wednesday, *12th April* 1871.—Dr BELL, *President*, in the Chair.

A. C. Johnston, M.R.C.S.E., Lochgoilhead, and Robert Lucas, M.D., Dalkeith, were admitted as Ordinary Fellows of the Society.

I. *Dr Bruce* exhibited a FŒTUS WHICH HAD BEEN EXPELLED WITH THE MEMBRANES ENTIRE. It was about the seventh month, and had been dead for some time.

II. *Mr Stevenson Smith* exhibited a SIMILAR SPECIMEN. The fœtus was about the sixth month, and was expelled with the membranes unruptured after one true pain. He had attended the lady in two previous confinements. In the first, the baby was born in a very weak state, but is now a strong healthy boy; and in the second, the child was expelled stillborn at the eighth month.

III. He also showed the MEMBRANES, etc., OF A FŒTUS, between the second and third month, which had given rise to much hæmorrhage, endangering the life of the mother. On examination, a clot about the size of a small marble was found, and this effusion had evidently induced the premature expulsion of the ovum.

IV. *Dr Keiller* exhibited a GUTTA-PERCHA PESSARY, removed from a patient who had retained it in the vagina for five years. The patient had a fibroid tumour complicated with hernia. She had worn the pessary all that time without having any pain, fœtor, or discharge.

Dr Gordon remarked that pessaries of gutta-percha might be left in any length of time without giving rise to any unpleasant symptoms.

Dr Cochrane said he had met with one case in which a pessary had been retained for several years.

V. *Dr Pattison* made some observations on TWO INTERESTING CASES which had occurred recently in his practice.

Drs Keiller, *Jefferiss*, and *Mr Stevenson Smith*, made some remarks.

VI. A CASE OF SPONTANEOUS VERSION. BY DR STANLEY HAYNES, HELMSLEY. COMMUNICATED BY MR G. STEVENSON SMITH.

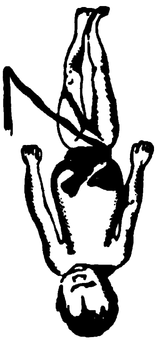
At 4.30 P.M. to-day, I attended Mrs M., aged thirty-seven, and found she was in labour; that the os uteri was dilated to the extent of two inches in diameter, and its edge was thick and soft; that the membranes protruded as a fluctuating rounded tumour; that the head presented in the left occipito-anterior position, and was at the pelvic brim; that the bladder and rectum were empty, and that all the parts were in a favourable condition. The patient believed that the membranes had ruptured the previous day, but she had not had any labour-pains until noon to-day; she now felt the pains in her back much more than in front. The pains recurred every three minutes, were moderately strong, and were dilating the os. The patient wishing to use a night-stool, I went into the next room, whence I was called in haste in a few minutes (at 5.15), and found her just flinging herself on to the bed, and requesting my assistance. It appeared that while on the stool she had felt a sudden and great movement within, and directly afterwards a conviction that the birth would be immediate. The breech and right foot now presented, the back of the child being towards the left foramen ovale. During the next pain, the presenting parts and the body up to the funis were expelled, and the left thigh and leg were found to be opposed to the trunk of the child. As the cord pulsated well, the next pain was waited for and quickly came, causing the birth in succession of the left foot, right arm and left arm. Another pain completed the delivery of a moderate-sized, vigorous male child. The placenta came away twenty minutes later (at 5.40).

The mother stated she had had seven children without any unusual occurrence, and that all had presented by the head. During the past week she suffered much from vomiting, which was arrested by the third dose of bismuth and hydrocyanic acid mixture.

VII. A CASE OF DEATH OF FŒTUS FROM COILING OF THE FUNIS.

BY DR ALEXANDER MILNE. COMMUNICATED BY MR THOMSON.

Mrs M., a healthy and strong woman, was confined of her first child on the 14th of March last. Labour proceeded naturally, but on making an examination to ascertain progress, I thought the scalp somewhat flabby, and the cranial bones overlapping rather freely. When the head was born, I noticed the lips not simply cyanotic, but black, and there was no movement of any kind,—in short, the child was dead. When the trunk was expelled, the cause of death became quite clear. The funis was coiled thrice round the abdomen, in the manner shown in the drawing. The abdomen, it will be observed, is considerably constricted, but not sufficient to constitute this into one of the causes of death. The vessels of the funis are not abnormally twisted; the spirality does not exceed that which is usually found. The cause of death was indubitably owing to the extreme stretching of that part of the cord close to the umbilicus. This part was so tight that the finger could with difficulty be inserted below it. The drawing shows this pretty well; the umbilicus is seen to be drawn out, and quite obliterated by the strength of the traction. Large patches of cuticle are seen to have been peeled from the abdomen and other parts.



The mother says that the child was always exceedingly lively, and that often during the night its movements broke her slumber. About twelve days before labour set in there was an "unusual struggling in her belly," but after this all movement ceased, and she apprehended that all was not well with it. This violent commotion, I presume we may conclude, was owing to the interruption to the circulation in the funis.

The child was well developed, and bore no traces of disease, therefore there can be no doubt but that its death was owing to arrestment of the circulation. Coiling, we all know, is a common occurrence, and perfectly compatible with fœtal safety. It is only when overstretching, and consequent strangulation, takes place, that embryonic life is compromised.

Dr Pattison said it was singular to see the cord twisted round the abdomen.

Dr Frazer made some remarks on the distinction between asphyxia and apnœa.

SESSION XXX.—MEETING XI.

Wednesday, 26th April 1871.—Dr KEILLER in the Chair.

I. *Dr Keiller* exhibited A PLACENTA from a case of placenta prævia, in which he had delivered by turning. When called to the case the patient was much exhausted from loss of blood, and the vagina was almost filled with a clot. The placenta was not entirely over the os, and the membranes were unruptured. The afterbirth came away almost immediately after extraction of the child. This was a case where delay would have proved dangerous. He recollected at least three cases of death after version through interference being too long delayed.

II. Case of RUPTURE OF FALLOPIAN TUBE, AND DEATH FROM HÆMORRHAGE. By Dr Heigham. Communicated by Dr Keiller.

III. NOTES OF A REMARKABLE CASE OF EARLY PREGNANCY.

Dr James Young mentioned the following case of early pregnancy. Mrs A. B. was born on the 11th of October 1855, and menstruated on the 11th of May 1869, at the age of thirteen years and seven months. Sexual intercourse took place on the 20th of November 1869, and she was married in March 1870—after the discovery of pregnancy, which must have commenced at the age of *fourteen years* and one month. A large male child was born on the 24th of August 1870, at the age of *fourteen years* and *ten* months. The labour was very protracted (fourteen hours) and difficult, a large caput succedaneum having formed on the head. The mother made a good recovery, but suffered severely from suppuration of one mamma, with partial sloughing. Dr Young said he had met with very many cases of early menstruation, but he never met with a case of preg nancy, nor ever heard of one in this country, at such an early age as fourteen years and ten months, where the uterus threw off a large healthy male child.

Dr Duncan said he remembered attending a young lady a long time ago in her first confinement, who was said to be under fifteen, —the father of the child being sixteen years of age.

Dr Keiller had seen a number of cases of early pregnancy, but the real age was often concealed. He remembered one patient who was confined in the Maternity at the age of fifteen. She was well formed, and had an easy labour.

Dr Cuthbert attended a case where the mother's age was between fifteen and sixteen, and she had been skipping the rope just the day before.

IV. NOTES OF A CASE OF AN ANENCEPHALOUS FŒTUS.

BY DR FRAZER.

On the 23d February 1860, I was called to a married woman aged 30, pregnant for the first time. I found her in the middle of the first stage of labour. I could not diagnose the presentation, being in doubt whether it was the breech or the shoulder which presented. However, as the labour advanced, the part came down more and more, and there was no doubt of its being the shoulder. I then resolved to turn the child. To aid in accomplishing this it was found necessary to put the patient very deeply under the influence of chloroform, because the uterine contractions were very strong. After the feet were brought down, the expulsion of the child was effected in two or three minutes, with very little help from me. The fœtus proved to be anencephalous, but apparently well developed in other respects. It now forms part of the collection of Dr Matthews Duncan of this city. It was quite dead when it was born, but had evidently been alive not long before. I may mention that the woman, by her own account, had exceeded the usual period of nine months by two or three weeks. She made a good recovery. I believe the case in itself is not very extraordinary. I mention it to the Society in the hope of bringing out information regarding the diagnosis and treatment of such cases. I should feel obliged to the chairman, Dr Keiller, and to the members generally, for their opinion respecting the propriety of turning in the case just mentioned. I should like to know whether they believe that nature would have been able to effect the expulsion of the fœtus shoulder downwards, and if she could, whether the result was likely to have been as favourable to the mother as that from the practice which I adopted.

Dr Duncan said he recollected the case, but he had seen nothing of the labour. He did not wonder at any one being puzzled with such a case, but he was of opinion that an anencephalous child might be born in any way. If the shoulder came down and there was not sufficient room to let the fœtus pass in that way, there could be no harm in turning.

Dr Keiller remarked that the diagnosis of such cases was often difficult. They were not at all uncommon. He had about a dozen specimens in his museum. In one case which occurred in the Maternity a while ago, the child lived for some time.

Dr Bruce thought the diagnosis of such cases was always a little difficult, especially till the presenting part came well down.

Dr Ritchie believed that in such cases the child was retained longer *in utero* than usual, and that the second stage of labour was apt to be protracted.

Professor Simpson said that in some such cases the fœtus was not at all well developed, especially when a cleft in the spine existed. The diagnosis was usually rendered easier by combined external and internal examination.

Dr Young said he had related the particulars of a case of this kind to the Society some years ago. The mother had previously given birth to two children, and since then she had had two stillborn children.

SESSION XXX.—MEETING XII.

Wednesday, 10th May 1871.—Dr Keiller in the Chair.

I. CASE OF FIBROID POLYPUS OF THE UTERUS, WITH PREPARATION. BY DR THOMAS OF YSTALYFERA. COMMUNICATED BY PROFESSOR SIMPSON.

Maria E., æt. forty years, tall and of light complexion; married eleven years; has had four children; two died young, but the two living ones are healthy, the younger now six years of age.

There is nothing striking in her antecedent history. Her father died about six years since from heart disease; mother is still alive, and has always enjoyed good health, with the exception of being occasionally troubled with rheumatism. Has four sisters and three brothers, all healthy.

24th April 1869.—I was asked to see her in consequence of an alarming attack of flooding, which had come on suddenly whilst washing the floor. She stated that she lost some blood about a fortnight before, and even on four previous occasions, but never considered it bad enough to seek advice. She has never had a miscarriage, and has always menstruated regularly up to about three months back, when the irregularity as to time commenced, and the flow to increase in quantity. On my first visit I made no vaginal examination, simply ordering complete rest, gallic acid with brandy according to circumstances, etc.

The following day (25th), she was much better, having rallied considerably.

26th.—Not so well, with a recurrence of the bleeding. On proposing an examination, she told me that about three months back she perceived a "hard lump in the bottom of her belly," and on placing my hand on her abdomen, I could feel distinctly a hard smooth resisting body, emerging considerably above the pubes, with another a little nearer the umbilicus, and rather to the left side, but of a much smaller size, and evidently more superficial than the lower one. This tumour grows evidently from the thickness of the uterine wall, projecting upwards in the left hypogastric region.

In making a vaginal examination, I felt an oval body protruding through the os. It was hard, smooth, and attached pretty high up to the posterior part of the cervix uteri. By manipulating with one hand in the vagina and the other on the abdomen, one could form a fair idea of its oval size. The patient lost this time a great quantity of blood, and I was afraid she would not rally; however, she improved gradually, and by the 28th reaction had fairly set in.

Owing to its large size and its extensive attachments, I told the friends that I was of opinion that any interference with the view of its removal would be too hazardous in her present prostrated, state. She continued to improve, and after about six weeks' attendance I quite lost sight of her, until 15*th December* 1870 (nearly twenty-one months since the date of my first attendance, and about two years since she had first noticed any enlargement), when I was again requested to see her. She was now in great pain, and, on examination, I found the tumour filling up the vagina, with its apex all but projecting beyond the valvular aperture; and owing to the pressure signs, which rendered defecation difficult and micturition impossible, I had no other alternative but to recommend a speedy removal.

Mr John R. James, surgeon, administered chloroform, and without much difficulty I managed to get the chain of the ecraseur round the pedicle, which was very tense, and about the size of an ordinary female's wrist.

After tightening the chain to an extent short of cutting into the texture of the pedicle, we found it failed to make any further impression upon it. We could by main force work the handle up and down, but the spring would not catch—something very much after the fashion of a screw that has been over-tightened, so that the thread gives.

The ecraseur, after a fruitless trial of nearly an hour, had to be abandoned, and next I tried to tear it through by means of a strong whip-cord, which, like the ecraseur, only proved useless. Lastly, I tied a piece of strong cord as tightly as I could and as high round the pedicle as I could reach, and below this managed with some little difficulty to cut through it with a small scalpel, and without any loss of blood. The ligature came away on the third day in some Condy's fluid, with which I cleansed the parts for four days after the operation.

The tumour, shortly after removal, weighed all but two pounds, and resembled very much in size, shape, and appearance a bullock's heart. The woman made a very rapid recovery, and in a fortnight was about the house attending to her usual duties.

Two months after the operation, I again examined the patient, and especially the uterus, but could detect nothing abnormal, beyond a small parietal tumour, situated in the fundus uteri, and rather to the left side.

Dr Simpson showed the tumour, which on section was seen to be a beautiful specimen of uterine myoma or fibroid tumour of the uterus that had originally been intramural, and, under the muscular contractions of the walls, has been partially expelled. The mucous membrane was thick and vascular, and contrasted with the paler glistening fibroid structure of the interior of the mass.

Dr Keiller remarked that the cut surface of the polypus resembled mahogany. He was inclined to think that the author was a little too timid as to cutting, after compression had been made by the ecraseur. He had frequently in his own practice snipped across the pedicle with scissors or a bistoury, after it had been well crushed, and almost no hæmorrhage followed. He had exhibited to the Society some years ago a large polypus which he had removed, about the size of the fist, and in that case he cut through the pedicle after compression with the ecraseur. He had in his museum another preparation showing a polypus just coming through the cervix. An attempt had been made to remove it, but without success.

Dr Gordon remarked that in such cases the blood usually came from the uterus, and not from the tumour. He had seen the late Sir James Simpson cut very largely into such tumours without causing much bleeding.

II. ON THE MODE OF INTRODUCING THE MIDWIFERY FORCEPS, AND

III. NOTE ON MODIFICATION OF MIDWIFERY FORCEPS.

BY DR CAPPIE.

(This paper will appear in a future Number of the Journal.)

Professor Simpson said he had been in the habit of using the right hand as a guide in introducing the forceps, but not in the way described by Dr Cappie. He thought it a good plan to direct the point of the blade more towards the hollow of the sacrum than was usually done. It was a matter of indifference how the patient was placed, if chloroform is used. Sometimes with the patient on the back, the operator can exert more purchase and power.

Dr Gordon thought that it was an excellent plan to pass the blade on with the forefinger inside the fenestrum.

Dr Bruce said he was in the habit of keeping the patient in the ordinary position. He used the left hand to hold the instrument, but twisted the wrist forwards. He found it a good plan, in introducing the first blade, to push it well downwards and backwar

Sometimes with the patient lying on her back more power could be used.

Dr Duncan said he never found any difficulty in applying the instruments. They might be applied in almost any way, but the difficulty usually came after. It would not do in all cases to apply the blades along the curve of the sacrum. He thought that in all cases the pelvis of the patient ought to be close to the edge of the bed. It was no doubt desirable that the operation should be made as little formidable as possible, but the patient should be placed in the best possible position.

Dr Keiller said that his views corresponded with those of Dr Duncan. He was of opinion that it would not do to teach young and inexperienced practitioners that Dr Cappie's mode of introducing the forceps was the proper one. He always liked to have the patient placed well across the bed, and it is often necessary to use more than the forefinger to ascertain with certainty where the point of the blade is going. When there is much doubt or difficulty, he advises his students to introduce the whole hand into the passages. It has been suggested that the handles of the instrument might be turned backwards, so as to make the operator independent of the position of the patient. He often thought that instruments might be made without handles, their place being supplied by the fingers.

Dr Young agreed with Dr Keiller as to the propriety of introducing the whole hand in cases of doubt.

Dr Cappie made a few remarks in reply, and stated that he had once used his forceps without the patient or the attendant knowing anything about it.

Part Fourth.

PERISCOPE.

A Graduation Address of great interest was delivered last March by Dr Oliver Wendell Holmes of Harvard University. From it we take the following extracts:—

I speak more directly to you, then, gentlemen of the graduating class. The days of your education, as pupils of trained instructors, are over. Your first harvest is all garnered. Henceforth you are to be sowers as well as reapers, and your field is the world. How does your knowledge stand to-day? What have you gained as a permanent possession? What must you expect to forget? What remains for you yet to learn? These are questions which it may interest you to consider.

There is another question which must force itself on the thoughts of many among you: "How am I to obtain patients and to keep their confidence?" You have chosen a laborious calling, and made many sacrifices to fit yourselves for its successful pursuit. You wish to be employed that you may be useful, and that you may receive the reward of your industry. I would take advantage of these most receptive moments to give you some hints which may help you to realize your hopes and expectations. Such is the outline of the familiar talk I shall offer you.

Your acquaintance with some of the accessory branches is probably greater now than it will be in a year from now—much greater than it will be ten years from now. The progress of knowledge, it may be feared, or hoped, will have outrun the text-books in which you studied these branches. Chemistry, for instance, is very apt to spoil on one's hands. "*Nous avons changé tout cela*" might serve as the standing motto of many of our manuals. Science is a great traveller, and wears her shoes out pretty fast, as might be expected.

You are now fresh from the lecture-room and the laboratory. You can pass an examination in anatomy, physiology, chemistry, materia medica, which the men in large practice all around you would find a more potent sudorific than any in the Pharmacopœia. These masters of the art of healing were once as ready with their answers as you are now, but they have got rid of a great deal of the less immediately practical part of their acquisitions, and you must undergo the same depleting process. Hard work will train it off, as sharp exercise trains off the fat of a prize-fighter.

Yet, pause a moment before you infer that your teachers must have been in fault when they furnished you with mental stores not directly convertible to practical purposes, and likely in a few years to lose their place in your memory. All systematic knowledge involves much that is not practical, yet it is the only kind of know-which satisfies the mind, and systematic study proves in the long-run the easiest way of acquiring and retaining facts which are practical. There are many things which we can afford to forget, which yet it was well to learn. Your mental condition is not the same as if you had never known what you now try in vain to recall. There is a perpetual metempsychosis of thought, and the knowledge of to-day finds a soil in the forgotten facts of yesterday. You cannot see anything in the new season of the guano you placed last year about the roots of your climbing plants, but it is blushing and breathing fragrance in your trellised roses; it has scaled your porch in the bee-haunted honeysuckle; it has found its way where the ivy is green; it is gone where the woodbine expands its luxuriant foliage.

Your diploma seems very broad to-day with your list of accomplishments, but it begins to shrink from this hour like the *Peau de Chagrin* of Balzac's story. Do not worry about it, for all the while there will be making out for you an ampler and fairer parchment, signed by old Father Time himself as President of that great Un versity in which experience is the one perpetual and all-sufficient professor.

Your present plethora of acquirements will soon cure itself. Knowledge that is not wanted dies out like the eyes of the fishes of the Mammoth Cave. When you come to handle life and death as your daily business, your memory will of itself bid good-bye to such inmates as the well-known foramina of the sphenoid bone and the familiar oxides of methyl-ethyl-amyl-phenyl-ammonium. Be thankful that you have once known them, and remember that even the learned ignorance of a nomenclature is something to have mastered, and may furnish pegs to hang facts upon which would otherwise have strewed the floor of memory in loose disorder. . . .

It must be confessed that the great hospitals, infirmaries, and dispensaries of large cities, where men of well-sifted reputations are in constant attendance, are the true centres of medical education. No students, I believe, are more thoroughly aware of this than those who have graduated at this institution. Here, as in all our larger city schools, the greatest pains are taken to teach things as well as names. You have entered into the inheritance of a vast amount of transmitted skill and wisdom, which you have taken, warm, as it were, with the life of your well-schooled instructors. You have not learned all that art has to teach you, but you are safer practitioners to-day than were many of those whose names we hardly mention without a genuflection. I had rather be cared for in a fever by the best-taught among you than by the renowned Fernelius or the illustrious Boerhaave, could they come back to us from that better world where there are no physicians needed, and, if the old adage can be trusted, not many within call. I had rather have one of you exercise his surgical skill upon me than find myself in the hands of a resuscitated Fabricius Hildanus, or even of a wise Ambroise Paré, revisiting earth in the light of the nineteenth century.

You will not accuse me of underrating your accomplishments. You know what to do for a child in a fit, for an alderman in an apoplexy, for a girl that has fainted, for a woman in hysterics, for a leg that is broken, for an arm that is out of joint, for fevers of every colour, for the sailor's rheumatism, and the tailor's cachexy. In fact, you do really know so much at this very hour, that nothing but the searching test of time can fully teach you the limitations of your knowledge.

Of some of these you will permit me to remind you. You will never have outgrown the possibility of new acquisitions, for Nature is endless in her variety. But even the knowledge which you may be said to possess will be a different thing after long habit has made it a part of your existence. The *tactus eruditus* extends to the mind as well as to the finger-ends. Experience means the knowledge gained by habitual trial, and an expert is one who has been in the habit of trying. This is the kind of knowledge that made Ulysses wise in the ways of men. Many cities had he seen, and known the minds of those who dwelt in them. This knowledge it was that Chaucer's Shipman brought home with him from the sea:

> "In many a tempest had his berd be shake."

This is the knowledge we place most confidence in, in the practical affairs of life. . . .

Book-knowledge, lecture-knowledge, examination-knowledge, are all in the brain. But work-knowledge is not only in the brain, it is in the senses, in the muscles, in the ganglia of the sympathetic nerves—all over the man, as one may say, as instinct seems diffused through every part of those lower animals that have no such distinct organ as a brain. See a skilful surgeon handle a broken limb; see a wise old physician smile away a case that looks to a novice as if the sexton would soon be sent for; mark what a large experience has done for those who were fitted to profit by it, and you will feel convinced that, much as you know, something is still left for you to learn.

May I venture to contrast youth and experience in medical practice, something in the way the man painted the lion—that is, the lion under?

The young man knows the rules, but the old man knows the exceptions. The young man knows his patient, but the old man knows also his patient's family, dead and alive, up and down for generations. He can tell beforehand what diseases their unborn children will be subject to, what they will die of if they live long enough, and whether they had better live at all, or remain unrealized possibilities, as belonging to a stock not worth being perpetuated. The young man feels uneasy if he is not continually doing something to stir up his patient's internal arrangements. The old man takes things more quietly, and is much more willing to let well enough alone. All these superiorities, if such they are, you must wait for time to bring you. In the meanwhile (if we will let the lion be uppermost for a moment), the young man's senses are quicker than those of his older rival. His education in all the accessory branches is more recent, and therefore nearer the existing condition of knowledge. He finds it easier than his seniors to accept the improvements which every year is bringing forward. New ideas build their nests in young men's brains. "Revolutions are not made by men in spectacles," as I once heard it remarked, and the first whispers of a new truth are not caught by those who begin to feel the need of an ear-trumpet. Granting all these advantages to the young man, he ought, nevertheless, to go on improving, on the whole, as a medical practitioner, with every year, until he has ripened into a well-mellowed maturity. But, to improve, he must be good for something at the start. If you ship a poor cask of wine to India and back, if you keep it half a century, it only grows thinner and sharper.

You are soon to enter into relations with the public, to exp your skill and knowledge for its benefit, and find your support in the rewards of your labour. What kind of a constituency is this which is to look to you as its authorized champions in the struggle of life against its numerous enemies?

In the first place, the persons who seek the aid of the physician are very honest and sincere in their wish to get rid of their complaints, and, generally speaking, to live as long as they can. However attractively the future is painted to them, they are attached to the planet with which they are already acquainted. They are addicted to the daily use of this empirical and unchemical mixture which we call air, and would hold on to it as a tippler does to his alcoholic drinks. There is nothing men will not do, there is nothing they have not done, to recover their health and save their lives. They have submitted to be half-drowned in water, and half-choked with gases, to be buried up to their chins in earth, to be seared with hot irons like galley-slaves, to be crimped with knives, like cod-fish, to have needles thrust into their flesh, and bonfires kindled on their skin, to swallow all sorts of abominations, and to pay for all this, as if to be singed and scalded were a costly privilege, as if blisters were a blessing, and leeches were a luxury. What more can be asked to prove their honesty and sincerity?

This same community is very intelligent with respect to a great many subjects—commerce, mechanics, manufactures, politics. But with regard to medicine it is hopelessly ignorant and never finds it out. I do not know that it is any worse in this country than in Great Britain, where Mr Huxley speaks very freely of "the utter ignorance of the simplest laws of their own animal life, which prevails among even the most highly-educated persons." And Cullen said before him: "Neither the acutest genius nor the soundest judgment will avail in judging of a particular science, in regard to which they have not been exercised. I have been obliged to please my patients sometimes with reasons, and I have found that any will pass, even with able divines and acute lawyers; the same will pass with the husbands as with the wives." If the community could only be made aware of its own utter ignorance, and incompetence to form opinions on medical subjects, difficult enough to those who give their lives to the study of them, the practitioner would have an easier task. But it will form opinions of its own, it cannot help it, and we cannot blame it, even though we know how slight and deceptive are their foundations. . . .

Experience has taught, or will teach you, that all the wonderful stories patients and others tell of sudden and signal cures are like Owen Glendower's story of the portents that announced his birth. The earth shook at your nativity, did it? Very likely, and—

> "So it would have done,
> At the same season, if your mother's cat
> Had kittened, though yourself had ne'er been born."

You must listen more meekly than Hotspur did to the babbling

Welshman, for ignorance is a solemn and sacred fact, and, like infancy, which it resembles, should be respected. Once in a while you will have a patient of sense, born with the gift of observation, from whom you may learn something. When you find yourself in the presence of one who is fertile of medical opinions, and affluent in stories of marvellous cures—of a member of Congress whose name figures in certificates to the value of patent medicines, of a voluble dame who discourses on the miracles she has wrought or seen wrought with the little jokers of the sugar-of-milk globule-box,—take out your watch and count the pulse; also note the time of day, and charge the price of a visit for every extra fifteen, or, if you are not very busy, every twenty minutes. In this way you will turn what seems a serious dispensation into a double blessing, for this class of patients loves dearly to talk, and it does them a deal of good, and you feel as if you had earned your money by the dose you have taken, quite as honestly as by any dose you may have ordered.

You must take the community just as it is, and make the best of it. You wish to obtain its confidence; there is a short rule for doing this which you will find useful—*deserve it.* But, to deserve it in full measure, you must unite many excellences, natural and acquired.

As the basis of all the rest, you must have all those traits of character which fit you to enter into the most intimate and confidential relations with the families of which you are the privileged friend and counsellor. Medical Christianity, if I may use such a term, is of very early date. By the oath of Hippocrates, the practitioner of ancient times bound himself to enter his patient's house with the sole purpose of doing him good, and so to conduct himself as to avoid the very appearance of evil. Let the physician of to-day begin by coming up to this standard, and add to it all the more recently discovered virtues and graces. . . .

I warn you against all ambitious aspirations outside of your profession. Medicine is the most difficult of sciences and the most laborious of arts. It will task all your powers of body and mind if you are faithful to it. Do not dabble in the muddy sewer of politics, nor linger by the enchanted streams of literature, nor dig in far-off fields for the hidden waters of alien sciences. The great practitioners are generally those who concentrate all their powers on their business. If there are here and there brilliant exceptions, it is only in virtue of extraordinary gifts, and industry to which very few are equal.

To get business a man must really want it, and do you suppose that when you are in the middle of a heated caucus, or half-way through a delicate analysis, or in the spasm of an unfinished ode, your eyes rolling in the fine frenzy of poetical composition, you want to be called to a teething infant, or an ancient person groaning under the griefs of a lumbago? . . .

What shall I say of the personal habits you must form if you wish for success? Temperance is first upon the list. Intemperance in a physician partakes of the guilt of homicide, for the muddled brain may easily make a fatal blunder in a prescription, and the unsteady hand transfix an artery in an operation. Tippling doctors have been too common in the history of medicine. Paracelsus was a sot, Radcliffe was much too fond of his glass, and Dr James Hurlbut, of Wethersfield, Connecticut, a famous man in his time, used to drink a square bottle of rum a day, with a corresponding allowance of opium to help to steady his nerves. We commonly speak of a man as being the worse for liquor, but I was asking an Irish labourer one day about his doctor, who, as he said, was somewhat given to drink. "I like him best when he's a little that way," he said—"then I can spake to him." I pitied the poor patient who could not venture to allude to his colic or his pleurisy until his physician was tipsy.

There are personal habits of less gravity than the one I have mentioned which it is well to guard against, or, if they are formed, to relinquish. A man who may be called at a moment's warning into the fragrant boudoir of suffering loveliness, should not unsweeten its atmosphere with reminiscences of extinguished meerschaums. He should remember that the sick are sensitive and fastidious, that they love the sweet odours and the pure tints of flowers, and if his presence is not like the breath of the rose, if his hands are not like the leaf of the lily, his visit may be unwelcome, and if he looks behind him he may see a window thrown open after he has left the sick-chamber. . . .

Need I remind you of the importance of punctuality in your engagements, and of the worry and distress to patients and their friends which the want of it occasions? One of my old teachers always carried two watches, to make quite sure of being exact, and not only kept his appointments with the regularity of a chronometer, but took great pains to be at his patient's house at the time when he had reason to believe he was expected, even if no express appointment was made. It is a good rule; if you call too early, my lady's hair may not be as smooth as could be wished, and if you keep her waiting too long, her hair may be smooth, but her temper otherwise.

You will remember, of course, always to get the weather-gage of your patient. I mean, to place him so that the light falls on his face and not on yours. It is a kind of ocular duel that is about to take place between you; you are going to look though his features into his pulmonary and hepatic and other internal machinery, and he is going to look into yours quite as sharply to see what you think about his probabilities for time or eternity. . . .

Your patient has no more right to all the truth you know than he has to all the medicine in your saddle-bags, if you carry that kind of cartridge-box for the ammunition that slays disease. He should get only just so much as is good for him. I have seen a physician examining a patient's chest stop all at once, as he brought out a particular sound with a tap on the collar-bone, in the attitude of a pointer who has just come on the scent or sight of a woodcock. You remember the Spartan boy, who, with unmoved countenance, hid the fox that was tearing his vitals beneath his mantle. What he could do in his own suffering you must learn to do for others on whose vital organs disease has fastened its devouring teeth. It is a terrible thing to take away hope, even earthly hope, from a fellow-creature. . . .

Some shrewd old doctors have a few phrases always on hand for patients that will insist on knowing the pathology of their complaints without the slightest capacity of understanding the scientific explanation. I have known the term "spinal irritation" serve well on such occasions; but I think nothing on the whole has covered so much ground, and meant so little, and given such profound satisfaction to all parties, as the magnificent phrase "congestion of the portal system." . . .

If there happened to be among my audience any person who wished to know on what principles the patient should choose his physician, I should give him these few precepts to think over:—

Choose a man who is personally agreeable; for a daily visit from an intelligent,[1] amiable, pleasant, sympathetic person will cost you no more than one from a sloven or a boor, and his presence will do more for you than any prescription the other will order.

Let him be a man of recognised good sense in other matters, and the chance is that he will be sensible as a practitioner.

Let him be a man who stands well with his professional brethren, whom they approve as honest, able, courteous.

Let him be one whose patients are willing to die in his hands, not one whom they go to for trifles and leave as soon as they are in danger, and who can say, therefore, that he never loses a patient.

Do not leave the ranks of what is called the regular profession, unless you wish to go farther and fare worse, for you may be assured that its members recognise no principle which hinders their accepting any remedial agent proved to be useful, no matter from what quarter it comes.—*New York Medical Journal*, April 1871.

CHLORAL IN OBSTETRICS.—Dr S. F. Starley of Fairfield, Texas, writes as follows concerning the value of chloral in obstetric practice:—"For nearly twenty years I have used chloroform in parturition; but since the introduction of chloral, I have substituted it for the former in a number of labours, and find it a valuable anæsthetic, and in many respects greatly preferable to chloroform. It is easy of administration, does not require the constant attention of the accoucheur, and produces no sudden or overwhelming effect. I usually commence with twenty grains; in one or two hours, fifteen to twenty grains again, and then often enough to keep up the anæsthetic effect. Quite recently I was called to a lady in her third labour, who, from living in a malarial region and from repeated chills, had well-marked malarial cachexia; and who, just after my entrance into her room, was seized with a violent convulsion, which soon passed off, leaving her in a semi-comatose condition. Thirty grains of chloral were administered as soon as she was able to swallow. Immediately upon sufficient dilatation of the os uteri, the forceps were applied, and she was delivered of a healthy child. She had no more convulsions, and made a good recovery. The favourable result in this case is fairly attributable, I believe, to the early administration of the chloral and the prompt application of the forceps. In another case, where the convulsion occurred just after the birth of the child, thirty grains of chloral were administered; another convulsion, and one-sixth of a grain of morphia was used by hypodermic injection: no more convulsions, and the patient recovered promptly. My experience leads me to believe that puerperal convulsions are of frequent occurrence in malarial regions; probably in consequence of the blood deterioration from the subtle poison of those regions. Now, if chloral is so efficient in *curing* convulsions, might not its timely administration to women in labour prevent their occurrence?"

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[1] "Non quærit æger medicum eloquentem sed sanantem: si tamen ita competit, ut idem ille qui sanare potest, compte de iis quæ facienda sunt disserat, boni consulet."—*Senec. Epist.* 76.—(ED. *E. M. J.*)

The Doctor speaks highly of the value of chloral in producing relaxation in case of rigidity of the os uteri. He believes it contraindicated when there is organic disease of the heart or danger of pulmonary congestion. Finally, he desires to urge upon his professional brethren the importance of the employment of this agent in suitable cases.

While referring to the subject of chloral in obstetrics, we append the following inquiry from Dr Charles B. Tydings, of Big Spring, Ky., and possibly Dr Starley or some other of our contributors will furnish the desired information. Dr T.'s inquiry is, "Does the hypnotic effect of chloral, when administered as an anæsthetic in parturition, extend to the child also?" He then states that in the only case under his observation it was given in fifteen-grain doses every twenty minutes for an hour and twenty minutes. The mother was unconscious at the birth of her child; and both mother and child fell into a profound slumber of eighteen hours' duration. Is it usual for such results to occur?—*American Practitioner.*

NITRO-MURIATIC ACID IN URTICARIA.—A. M. Lyles, M.D., of Early Grove, Mississippi, writes that he has found, for many years past, that ten drops of nitro-muriatic acid, in a wineglassful of water, one hour before eating, is an almost unfailing remedy for urticaria. He has observed that the disease is attended by the generation in the alimentary tube of an excessive amount of acid, which the nitro-muriatic acid, given as above, corrects.—*American Practitioner.*

NOTE ON THE HISTORY OF OVARIOTOMY. BY DR NATTA-SOLERI VINCENZO.

In 1752, the idea of ovariotomy entered the mind of an illustrious Italian, Jean Targioni Tozzetti, of Tuscany, after seeing a case in which the ovary had been successfully removed from a young girl by a man quite ignorant of surgery. He prophesied that ovariotomy would some day take rank as a recognised operation in surgery.

Morgagni next having made the distinction between simple or unilocular cysts and multilocular ones, stated that the first might be removed in cases where adhesions did not exist. It was a great step towards the admission of this operation, to state in 1761 the indications which should contraindicate its performance. Time and experience could do the rest.

Later, Monteggia, fearing the results of the operation which might follow extensive incisions, advised early operation before the cyst had attained a large size or contracted adhesions.

At length, in 1815, a modest surgeon, Emiliani Gaetano de Faenza, a man full of wisdom and daring, attempted the operation on a young woman, aged twenty-six. An otherwise good state of health encouraged the attempt, and the patient consented. He made an incision, eight inches in length, in the linea alba, through the whole thickness of the abdominal wall, down to the peritoneum, which he divided cautiously. The left ovary, much enlarged, then presented itself, and he recognised it adherent to the lower part of the colon. The adhesions being overcome, the tumour was got out of the belly, was removed, the vessels being tied as they were divided, after which the edges of the wound were united by suture, and covered by charpie and a gently retentive bandage. The case recovered; and thus it is not Hizars (Lizars) of Edinburgh who must be considered the first to practise ovariotomy scientifically in Europe, as he did not operate till 1825, or ten years after Dr Emiliani de Faenza. Ovariotomy entered Europe in 1815, through Italy, as can be verified by consulting the Bulletino delle Scienze Mediche de Bologna, where a detailed account of this operation will be found, which deserves a place among the first in the annals of surgery.—*Gazette Médicale de Paris.* No. 124, 1870.

Part Fifth.

MEDICAL NEWS.

Letter from Creuznach.—Dear Sir,—It is said in some English journals, that it is rather dangerous this year to visit Rhenish spas, for epidemic disease is ravaging there. I assure you, Sir, that it is not so. The state of health of our town this year is as good as it ever has been. We have lazarettos here for wounded and sick soldiers. But the barracks have been far off from the bath-hôtels, and in the town we have no epidemics of any kind, nor typhoid fever nor dysentery; only a few cases of smallpox, as almost everywhere. But also this disease has expired completely. I write you this letter in the interest of poor sick people, intending to visit Creuznach, and frightened by the rumour not to do so. You will do me a great service, if you will have the kindness to propagate this declaration, perhaps, by your *Edinburgh Medical Journal*.—Yours truly,

Dr Engelmann.

Hastings Prize.—Our readers will be glad to learn that Dr Milner Fothergill, of Leeds, the author of the very interesting paper on *Carbolic Acid from a Septic Point of View*, which appears in our present number, has been awarded the Hastings prize for an essay "On Digitalis—its Mode of Action, and its Use," which is stated by the adjudicators to be possessed of great original merit.

Death-Rate and Temperature.—The following interesting and valuable document was sent, in February last, to the Secretary of the Scottish Meteorological Society, by a well-known observer, Mr Gibb of Kettins, Forfarshire:—

I send you the list of Burials registered in the parish of Kettins in each month of the year for 31 years from 1686 to 1716; also for 45 years from 1751 to 1795; and for 4 years 1802–1805; and for 28 years from 1828 to 1855—viz., for 108 years; from which may be seen how temperature and climate affect the health and life.

No regular entries had been made during the years left out.

	Years.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Totals.	Means.
1686 to 1716	31	84	67	90	92	82	61	48	53	41	42	65	95	820	26·5
1751 to 1795	45	164	157	142	140	122	107	62	69	80	86	94	131	1354	30·0
1802 to 1805	4	19	13	9	4	10	9	12	7	9	5	6	6	109	27·2
1828 to 1855	28	45	34	51	31	32	23	45	29	21	39	39	42	431	15·5
Totals,	108	312	271	292	267	246	200	167	158	151	172	204	274	2714	25·13
Mean of 108 years,		2·89	2·51	2·70	2·47	2·28	1·85	1·55	1·46	1·40	1·59	1·89	2·54	25·13	2·10
Months reduced to 30 days each		2·81	2·67	2·61	2·47	2·21	1·85	1·50	1·41	1·40	1·54	1·89	2·46	...	2·07
Mean Temp. 13 yrs.		36°·1	38°·1	39°·3	44°·6	49°·4	54°·5	57°·3	56°·5	52°·9	46°·4	39°·6	38°·1	...	46°·1

If we compare the monthly mean of the burials for 108 years with the mean monthly temperature for 13 years, the close, or rather the almost exact, inverse relations of interments to temperature are very apparent.

The close relation of mortality to temperature has often been pointed out in this Journal. In these cases, *large population* and *short time* have been dealt with; but in the present case, *small population* and *long time* are dealt with, and the same result is disclosed.—*Journal of the Scottish Meteorological Society*, April.

SMALLPOX, says the *Lancet*, caused altogether twenty-nine deaths in the eight principal towns of Scotland during the month of May last; in London alone the deaths from that disease in the same month were over 1200. Making every allowance for the difference of population, the difference of mortality from this cause alone is as 13 to 1. The epidemic does not seem as yet to be greatly checked, but, on the whole, it seems to be declining.

PRESENTATION TO DR THOMAS KEITH.—On 2d June, an influential committee of medical men, headed by Dr Christison, presented to Mrs Keith, on behalf of seventy-nine subscribers, a portrait of her husband by Mr Reid, and a service of silver-plate. In making the presentation, Dr Christison said that the reasons for this presentation were the admiration of Dr Keith's professional brethren at his great success in treating one of the most terrible diseases which may affect the life of woman, his disinterestedness, his fine character, and his devotion to duty, and their appreciation of the sacrifices he had made in the pursuit of his object.

EUTHANASIA CANNABINA.—In the United States hanging is performed by jerking a man upwards, and not by letting him fall, and death does not ensue till after the lapse of from ten to fourteen minutes, respiration and circulation going on during that period in a gradually decreasing ratio. Nay, it is alleged, that in the case of one Rullof, who was recently hanged in the States, he had his hands in his pantaloons' pockets when jerked up, and that the right hand being shaken out, he coolly replaced it, moving it for that purpose a distance of three or four inches. The ordinary drop in this country is only three or four feet, and it is equally inefficient in producing sudden death. Of late, Professor Haughton has propounded a formula,—"Divide the weight of the convict in pounds into 2·240," the quotient obtained will give the length of the drop required in any given case to produce instant death by fracture of the vertebræ (*vide* our No. for Nov. 1870, p. 476). This long-drop system is inconvenient, however, from the length required, fourteen to twenty feet being a very ordinary length, and one not always easily obtained within the precincts of a jail. Besides, the unseemly result of decapitation has been attained, though this is said to have been solely the result of a rope ill made and defective in resiliency. Quite recently, Dr Barker, surgeon of the Melbourne Jail, has propounded, in the columns of the *Medical Times and Gazette*, a method of hanging equally certain and expeditious in promoting death as Haughton's long drop, and yet only requiring the ordinary and easily-procured drop of three or four feet. We shall allow him to describe his method in his own words:—"It was by chance that I was able to suggest the present method, merely through the bungling of the hangman allowing the knot to slip and come on the spine. I have the knot put about two inches from the spine, so that when it is tightened by the weight of the body the knot comes on the vertebræ; by the fall the body has an impetus forwards, the resistance being at the beam to which the rope is fastened; the knot acts as a fulcrum to push the head forwards. By this arrangement, in all cases where the knot has been so situated, I have found there was a dislocation between the second and third cervical vertebræ, with fracture of the third, and pressure on the spinal cord. I have always found laceration of the sterno-cleido-mastoid muscles, the muscles attached to the larynx, laceration of the larynx, and generally fracture of the hyoid bone, death in this case resulting from the injury to the spinal cord. Death is so sudden and complete, that in one case a lock of hair which a man held in his hand at the time of the drop was found in his hand when he was cut down at the end of the hour; in two or three other cases pocket handkerchiefs have been similarly retained and found in the criminals' hands when taken down. I have seen no movement of the upper extremities, but occasionally a little convulsive or perhaps reflex action of the lower." A still more recent writer in the same journal recommends what is probably the best and most perfect mode of promoting a euthanasia under such circumstances, that is, to make the cap, drawn over the convict's face before the drawing of the bolt, of oiled silk lined with cotton-wool, to saturate the cotton with methylic ether, and secure the cap round the neck by means of an elastic strap. Forty-eight seconds' inhalation of this agent are sufficient, according to Dr Richardson, to produce insensibility to pain, so that the time between the adjustment of the rope and the drawing of the bolt would be amply sufficient to ensure a painless death. It is obvious that here any question of the safety of the anæsthetic would be quite out of place, rapidity of action being the great desideratum.

FASHION IN FOOD.—Many a man will naturally and surely say, "I am careful; I have not yet wasted, and therefore cannot save bread or meat." Still he may find out the way of contributing to the result. At the present time our whole people are eating wheaten bread, and therefore the great burden of food falls on wheat. If wheat is scarce, it becomes dear, because no substitutes are consumed. Here comes a case:—Maize is an article of food used by others, which we do not use; yet our brethren in New England are fond of it, and they have the choice of wheat. It is from the want of habit and practice of using maize that the population do not resort to it; but if maize were brought sometimes into the variety of a well-to-do house, servants would learn how to deal with it, and they would use it in other houses and in their own when they marry.—*Food Journal.*

Waste Food.—In the matter of our daily food some is left on our plates, some goes into the fire, some into the grease-pot and to a marine-store dealer, and some into the dusthole. Now, it is true that we have the prerogative to do this, for the food is our own, and we have paid for it. We have paid the baker and the butcher, but we have not paid the Maker of the food, and can give no money to Him. Of Him we have only a right to obtain for our own wants with due regard to the rights of our neighbours.—*Food Journal.*

Appointment.—George May Lowe, M.D. Ed., of Lincoln, has been appointed Public Analyst for the division of Lindsey of that county.

OBITUARY.

James Watson, M.D.—At the ripe age of eighty-four, this well-known "Father" of the Glasgow faculty has passed to his rest. It is not often that any of our hard-worked profession attain to such length of years, and in Dr Watson's case it was not reached by any sparing of the work. For fifty years he was in harness, and, besides a large private practice, he discharged the duties, first of Surgeon, and afterwards of Physician to the Royal Infirmary, and also those of Physician to the Fever Hospital in Clyde Street. He was three times President of the Faculty of Physicians and Surgeons, Glasgow; and a portrait which hangs in the Faculty Hall, and the foundation of a "James Watson" prize, attest the affectionate esteem in which he was held by his medical brethren. Dr Watson has been retired from the practice of his profession for fully ten years, and leaves a family of four daughters and one son to mourn his loss. His son, Dr Ebenezer Watson, is Professor of Physiology in the Andersonian University.

William Hill, L.R.C.S. Ed.—On the evening of the 10th of June, this devoted and popular practitioner departed this life in the sixty-ninth year of his age. Besides his large private practice, he for five-and-twenty years did the work of a parish doctor without fee or reward, often paying for the needful medicines and wine from his own limited means. The people of Portobello and of Duddingston generally fully appreciated his disinterested and kindly services, and twice over presented him with a handsome testimonial; while his funeral, which was a public one, was attended by upwards of 600 of his fellow-townsmen, comprising all the best known men in the district.

M. Cocteau, surgeon of the Central Bureau, died, in the very commencement of a most brilliant career, by disease brought on by overwork in the hospital and in ambulances. (M. Cocteau's work on ligature of arteries was reviewed in our pages within the last year or two.)

M. **EHRMAN**, surgeon-in-chief, son of the venerable Dean of the Faculty at Strasburg, died at Mans, in consequence of wounds received in battle.

M. **COINDET**, surgeon-in-chief, having escaped the dangers of the Crimea, Mexico, and Sedan, was killed by a French bullet, close by the Hôtel de Ville, in one of the miserable days of the siege.

M. **BLANC**, of the military hospital at Vincennes, died of a purulent infection, after a puncture he received on the finger, while dressing a wounded Prussian.—*Gazette des Hôpitaux*. No. 119, 1870.

M. **LONGET**, the distinguished physiologist, died at Bordeaux, aged sixty-eight, broken-hearted, it is said, at the deplorable news from Paris during the reign of the *Commune*.

Dr **FREDERIC HOLST**, late Professor of Pharmacology in the University of Christiania, died there on 4th June last, aged seventy-nine.

PUBLICATIONS RECEIVED.

Lionel S. Beale, F.R.S.,—The Physiological Anatomy and Physiology of Man. London, 1871.

James Hardie, M.D.,—On the Pathology of Club-foot. London, 1871.

John Hawkes, M.D.,—On the General Management of Public Lunatic Asylums in England and Wales. London, 1871.

T. Holmes, M.A.,—System of Surgery, vol. v. London, 1871.

Carsten Holthouse, F.R.C.S.,—The Proper Selection and Scientific Application of Trusses. London, 1871.

Morell Mackenzie, M.D.,—The Use of the Laryngoscope. London, 1871.

Sir James Y. Simpson, Bart.,—Selected Obstetrical and Gynæcological Works. Edinburgh, 1871.

St George's Hospital Reports, vol. v., 1870. London, 1871.

Thirteenth Annual Report of the Commissioners in Lunacy for Scotland. Edin., 1871.

Richard John Waring, M.D.,—Manual of Practical Therapeutics. London, 1871.

Charles West, M.D.,—The Nervous System of Childhood. London, 1871.

PERIODICALS RECEIVED.

American Journal of Obstetrics,—May.

American Practitioner,—June.

Australian Medical Gazette,—March.

Berliner Klin. Wochenschrift,—May 29 to June 19.

Births, Deaths, and Marriages, Monthly Return of,—May.

British Medical Journal,—May 27 to June 24.

Bulletin Général de Thérapeutique,—May 30.

Doctor, The,—May, June.

Dublin Quarterly Journal of Medical Science,—May.

Food Journal,—June.

Gazette des Hôpitaux,—October 11, 1870, to February 11, 1871.

Gazette Hebdomadaire de Médecine, etc.,—Feb. 3 to March 3; March 31 to June 16.

Journal of the Scottish Meteorological Society,—April.

Kansas City Medical Journal,—April.

Klinische Monatsbläter für Augenheilkunde,—Oct. to Dec. 1870; Jan. to March 1871.

La Crónica Oftalmológica,—June 12.

Madras Monthly Journal of Medical Science,—May.

Medical Press,—June 7.

Medical Times and Gazette,—May 27 to June 24.

National Medical Journal,—May, June.

New York Medical Journal,—April.

Philadelphia Medical and Surgical Reporter,—April 29 to May 13.

Philadelphia Medical Times,—May 15 to to June 1.

Practitioner,—June.

Revue de Thérapeutique Medico-Chirurgicale,—May 21.

Virchow's Archiv,—May 12.

Part First.

ORIGINAL COMMUNICATIONS.

Article I.—*On the Principles which have determined the Classifications of Mental Diseases.* By Arthur Mitchell, A.M., M.D., etc., one of Her Majesty's Commissioners in Lunacy for Scotland.

The object of this paper will not be to disclose and advocate any particular classification of mental diseases, but rather to exhibit the principles which have determined the various classifications hitherto proposed. The broader and more general aspect which is thus given to the subject may possibly relieve it of some of the dryness which it would otherwise possess.

Acting on the old counsel, that it is foolishness to make a long prologue, I place myself at once *in medias res* by describing to you the classification which was proposed by Pinel.

This classification embodies the views of a well-known and careful observer, and goes sufficiently far back for our purpose. It was in the opinion of its propounder a system of nosology "founded in nature;" and the sense in which he thought this true will be seen from the following quotation:—"The powers of perception and imagination," he says, "are frequently disturbed without any excitement of the passions. The functions of the understanding, on the other hand, are often perfectly sound, while the man is driven by his passions to acts of turbulence and outrage. In many lunatics a periodical or continued delirium is united to extravagance or fury. Again, instances are not unfrequent of actual dementia or mental disorganization, where the ideas or internal emotions appear to have no connexion with the impressions of sense, and to succeed each other without order, and to vanish without leaving any traces of their existence. A still more deplorable condition is that of a total obliteration of the thinking faculties, or a privation, more or less absolute, of all ideas and emotions."

In these words Pinel stated the basis of his classification so tersely and clearly, that we can see what it is to be, before he has actually told us what it is,—namely, the very familiar division into 1. Melancholia; 2. Mania; 3. Dementia; and, 4. Idiotism.

Though these terms, in Pinel's understanding of them, covered substantially the same conditions which they still do in our acceptation of them, there were some differences. His melancholia, for instance, was a delirium directed upon one object or series of objects, and accompanied with sadness. He had a mania, again, without disorder of the understanding. His dementia was a weakness of the mental powers, while his idiotism was a high degree of this weakness, at whatever time of life it presented itself, and whatever its history was.

The great feature of this classification is, that it rests on the character of the existing mental phenomena. The differences in these phenomena were regarded as indicating different lesions or different diseases, and they constituted different species of derangement. In other words, the disease which one patient laboured under was melancholia, while another laboured under mania, and another under dementia. The classification, in short, rested on the idea that insanity was a lesion of the understanding itself, and not a corporeal lesion, of which the disorder of the understanding was a mere consequence or symptom.

So much, then, for Pinel, whose work was published about eighty years ago.

I pass from it to another work, published so recently as the year 1869, and also a work of authority, namely, "The Nomenclature of Diseases," drawn up by a Joint Committee appointed by the Royal College of Physicians of London.

In this work, insanity is properly included under Diseases of the Nervous System, which are in four great divisions:—1. Diseases of the Brain and its membranes; 2. Diseases of the Spinal Cord and its membranes; 3. Diseases of the Nerves; and 4. Disorders of the Intellect. It will be observed that the Committee speak of *diseases* of the brain, *diseases* of the spinal cord, and *diseases* of the nerves, but of DISORDERS of the intellect. What they understood to be the difference between diseases and disorders is not stated, and the use of the word *disorders* in reference to the intellect has probably been adopted as some sort of acknowledgment that it was felt to be scarcely correct to talk of diseases of the intellect; but no way of wholly avoiding it appears to have been seen.

When we turn to the divisions of the sub-class Disorders of the Intellect, we find very little change from Pinel's time, for they consist of—1. Mania; 2. Melancholia; 3. Dementia; 4. Idiotcy and Imbecility; and, 5. Paralysis of the Insane. In other words, they are still divided into disorder of the intellect with depression, disorder of the intellect with excitement, disorder of the intellect with feebleness or loss, and congenital absence of intellect. To these, however, is curiously added, as a separate division, *the general paralysis of the insane*—a disease whose very name indicates that it manifests itself by physical as well as by psychical signs, or that it is a disorder of the body as well as of the mind. Except for this anomalous interjection, this classification of mental diseases is substantially, if not identically, the same as that of Pinel. It is certainly determined by the character of the mental phenomena, and constitutes depression, excitement, and loss or absence of intellect into different diseases, or at least into different forms of disorder of the intellect.

If, therefore, we are to judge by the latest authorized nomenclature of diseases, matters are still very much where Pinel left them, as regards the classification of mental diseases.

Any such conclusion, however, would be a mistake, for many writers have shown great uneasiness in accepting this old classification, and other classifications have at various times been proposed.

These efforts to introduce a better classification have been made in two directions. Of the one, the mental phenomena under a different aspect continue to afford the basis. But the other tries to link these phenomena to the bodily diseases which give rise to them.

I shall give, as briefly as I can, one or two illustrations of the first. It will not be necessary to give them in great detail.

Esquirol, for example, changed the classification of his master by the addition of Monomania, and by giving to Dementia and Idiotcy the meanings which we now give them, making the first indicate deprivation, and the second privation of the intellectual faculties.

Prichard, again, divided all mental diseases into two classes; those in which the understanding or rational powers are affected, and those in which the moral or active principles are disordered; in other words, into intellectual and moral insanity.

Dr Bucknill thought that insanity might be intellectual, emotional, or volitional; but his fellow-worker, Dr Daniel Tuke, thought that a sounder metaphysical division would be into disorders of the mind involving, (1) The Intellect, (2) The Moral Sentiments, or (3) The Propensities; but he ended by adopting a division into Idiotcy, Dementia, Delusional Insanity, Emotional Insanity, and Mania.

Perhaps the most ingenious of all those classifications, which are founded on the mental symptoms, is that adopted by Dr Maudsley in his work on the Physiology and Pathology of the Mind. In his later work, entitled Body and Mind, he appears to have somewhat modified his opinions; but when he wrote the work referred to, he regarded the different varieties of mental disease as falling naturally into two great divisions: (1) Affective insanity, including moral and impulsive insanity; and (2) Ideational insanity, which might be either partial or general.

It will at once be seen that these classifications differ from that of Pinel and the London College of Physicians in this, that, although they still have the mental phenomena as their basis, they make the different forms of insanity depend on the different parts or faculties of the mind which are involved in disorder, and not simply on the exhibition of excitement, depression, or defect in the mental state. So far, therefore, this is the introduction of a new principle —to this extent at least, that it is another way of looking at the mental symptoms as a basis of classification.

Such efforts, however, to improve the classification of mental diseases have not produced anything very useful or novel—a fact which would probably surprise one of Pinel's early annotators, who exclaims, "What difficulties can baffle the ingenuity, or impede the progress, of the thoroughbred metaphysician?" And it stands as a fact that Pinel's old division is not yet dethroned, being that recommended about a couple of years ago by the College of Physicians, and that which is still practically adopted all over the country.

But I come now to show that, in spite of this, there is very broadly a sense of its unsatisfactoriness, and a certain feeling of shame at being unable to get rid of it. In what respects these feelings are well founded I hope to be able to show; and I think I shall best do so by illustrating and explaining the second direction which has been taken in the efforts made to improve the nosology of mental diseases—that, namely, which grounds the classification on the bodily diseases which give rise to the insanity.

Long before any systematic effort was made in this direction, its coming was in various ways foreshadowed. Writers, for instance, who still kept to a classification founded on mental symptoms could not avoid devoting chapters to the discussion of such special subjects as puerperal insanity, choreic insanity, cataleptic insanity, epileptic insanity, general paralysis, delirium tremens, rheumatic insanity, and so on. They are found treating these as distinct forms of mental disorder, apparently, too, without any surprise that they were thus treating them *separately*, and *not* in one of the chapters headed *mania*, or *melancholia*, or *dementia*. Even in the nomenclature of the London College of Physicians, to which I have referred, far away from disorders of the intellect, we find puerperal mania given as a distinct disease. Delirium tremens, too, stands quite apart; so do hysteria, hypochondriasis, and general paralysis. Yet in all these the intellect is disordered, and in some of them gravely so. And the disorder may exhibit either the state of mania, or of melancholia, or of dementia, and may involve either the intellect, or the emotions, or the propensities. But the relation of the mental disorder to some bodily disorder is in these cases so apparent, and forces itself so strongly on the attention, that it is felt they must be discussed and studied together—the mental phenomena sinking into the position of mere signs of some bodily disease.

Indeed, the London College has lifted those conditions, in which the relation of a mental to a bodily state is quite manifest, altogether out of the class of mental disorders, and has given them a position among bodily disorders. This, however, is not done deliberately, or on any formulated principle;—it seems rather to be the product of a loose and unconscious acknowledgment that where such a view of insanity *could be shown* in a nosological system, it *should be shown*:—that puerperal mania, for instance, should not be separated from the puerperal state.

Some writers, again, make a more systematic and open advance, and enunciate a classification in which the mental phenomena are treated as symptoms, and the alliance between them and bodily diseases is made largely apparent. Notable among such authors are Morel and Schroeder Van der Kolk.

First, as regards Morel. He thought that mental diseases arranged themselves in six groups—viz.: 1. Hereditary Insanity; 2. Toxic Insanity; 3. Insanity determined by Neurotic Affections, like epilepsy, chorea, etc.; 4. Idiopathic Insanity; 5. Sympathetic Insanity; and, 6. Dementia.

It will be instantly seen that this classification is not based on the mental symptoms—either like Pinel's, with reference to manifestations of excitement, depression, or loss; or like Prichard's or Bucknill's, with reference to the particular faculties of the mind which exhibit disorder. On the contrary, it affects to rest chiefly on the nature of the predisposing and exciting causes; and Morel endeavoured to show that similar causes generally produce similar mental derangements, so that hereditary insanity, for instance, becomes to some extent recognisable by the character of the mental phenomena a patient exhibits, as well as by his family history. In applying his classification, however, it is found that his first and fourth groups—hereditary and idiopathic insanity—are somewhat conveniently elastic, and are easily made to include any cases which do not readily fall into the other groups; while, in those other groups, we find cases with a right to be regarded as hereditary, which it would be very difficult indeed to dispute. Then his last class, dementia, is altogether out of harmony with the others, being determined solely by the character of the mental symptoms, and being, in fact, simply a class made up of patients drafted into it from the other divisions in the concluding stage of their disorder.

Schroeder Van der Kolk, again, feeling that every classification must be unsatisfactory which proceeded more from the morbid symptoms than from the nature and origin of the disease, reduced the different forms of insanity to two groups, which, he thought, served all considerations in a therapeutical point of view. The first group he called Idiopathic Insanity, because in it the brain suffers primarily. The second group he called Sympathetic Insanity, because in it the brain suffers secondarily. In this classification, therefore, every form of insanity is regarded as due to some bodily disease; but the defect of the system, as he carried it out, was, that sympathetic insanity, by long continuance, might, and in a large number of cases did, become idiopathic insanity; in other words, after the psychical function of the brain had been long deranged by the irritating influence of some distant bodily disease, such structural changes might be induced in the brain as would then make the insanity directly due to them, and no longer to a mere secondary or sympathetic disturbance of its psychical functions. This classification, like Morel's, had one great convenience. Every case which could not be shown to be sympathetic was easily classed as idiopathic.

Schroeder Van der Kolk looked on mania, melancholia, and dementia solely as symptoms—as nothing but different kinds of mental confusion and defect; and his classification, though imperfect and objectionable, is the expression of a desire to get nearer to the root of the matter by keeping the insanity in close association with its pathological origin.

At an international congress of physicians engaged in the treatment of insanity, which met at Paris in 1867, a classification was proposed more or less on the principles which guided Morel and Van der Kolk; but it wants homogeneousness, and exhibits evidence of many compromises, that is, of being made up of fragments of the various systems which the different members of the congress advocated, and it is not probable that it will ever be adopted. It consists of a division of mental diseases into (1) Simple Insanity, (2) Epileptic Insanity, (3) Paralytic Insanity, (4) Senile Dementia, (5) Organic Dementia, (6) Idiotcy, and (7) Cretinism.

I have now only to make allusion to one other effort to classify mental diseases. It is the boldest and the best which has been made in recent times. In a certain sense, the efforts of those writers to whom I have just been referring led up to it; but it distances them so far as to have all the merit of a new idea, and its author loses nothing of the honour it has brought him by what had been done before. It will be readily admitted that it has a special interest to medical men connected with Edinburgh, when I state that it was proposed by one so well known to them as Dr Skae, who gave it body in the presidential address which he delivered to the Medico-Psychological Association in 1863.

Dr Skae starts with the proposition that we ought to classify the varieties of insanity according to their natural history, which he calls a rational and practical basis. He shows that, in the actual presence of the insane, book-learning about mania, melancholia, emotional insanity, volitional insanity, and such other reputed forms of mental disease, is misty, disappointing, and all but useless; and he reminds us that whenever we are required to direct the treatment or predict the issue of a particular case, we invariably find ourselves making minute inquiries into its history, with the object of fixing the relations of the mental symptoms to some bodily state or bodily disease. Is it associated with parturition? we ask ourselves; with the arrival of puberty, or the cessation of the menses; with prolonged lactation; with hard drinking; with epilepsy, paralysis, or chorea; with phthisis, syphilis, or rheumatism? In such circumstances, he says, these are the points we find ourselves investigating. If we stopped with determining that the mental action showed excitement, or showed depression, there would be no feeling that we had determined anything that was likely to be useful. In other words, we instinctively endeavour to classify in our minds, for practical purposes, all cases of insanity according to their natural history or origin.

This, I think, is briefly Dr Skae's position,—a classification based on the bodily disease, of which the mental phenomena are merely signs. His experience led him to propose 27 groups. I shall not occupy time by naming them, but when I say that they include epileptic insanity, insanity of pubescence, climacteric insanity, general paralysis, delirium tremens, hysterical mania, puerperal mania, mania of lactation, traumatic mania, etc., their general character will at once be understood, and it will be seen that each division derives its character from the originating or accompanying bodily state.

Idiopathic insanity appears as the 27th, or last, in the list; and it serves in this classification a convenient purpose, as it does in others. Cases which cannot be referred to any of the other 26 groups find a place in the 27th. The more, however, that insanity is studied from this point of view, the fewer will the cases be which are thus classed as idiopathic.

In many of these groups the mental manifestations are understood to be distinctive, as well as the so-called natural history. For instance, in general paralysis, delirium tremens, uteromania, climacteric insanity, phthisical insanity, etc., there are mental phenomena which may safely be described as of tolerably steady occurrence, and which are at least sufficiently distinctive, when they present themselves, to suggest our looking for sexual excess, or hard drinking, or irritable ovary, or phthisis, as the case may be, in the patient's history. If this were broadly true of all the groups, it would of course be a point of the very highest scientific interest and practical value. It appears to me, however, to be sufficiently true to raise pleasing hopes as to the extent which our knowledge of the nature of healthy and unhealthy mental operations may yet attain.

Such, then, is an outline of this classification. That it is a great effort in a right direction, I believe to be very generally admitted; that it was complete, Dr Skae did not himself hold. It was rather a proposal out of which something else would ultimately grow. As yet, however, the efforts which have been made to improve it have not been attended with much success. That by his pupil, Dr Tuke, is perhaps the most formal and the best.

It would be easy to criticise this classification, and to show how its application is beset with difficulties; but it would always retain the special merit which Dr Skae claimed for it, "that it keeps ever before us the all-important principle, that insanity is a disease of the body, whether it be disease of some remote organ acting sympathetically, or disease of the brain itself."

We took insanity out of the domain of theology many years ago. The treatment of it is no longer associated with the sacerdotal office. There are priests, I suppose, at Besançon still, but they have ceased to cast out the demons which were supposed to possess maniacs and melancholics, and no one nowadays would own the repulsive theory, and say, "Deorum afflatu hic furor provenit." From the supernatural the separation may be regarded as nearly complete, unless, indeed, we admit that there is sometimes a savour of the supernatural about the metaphysics, in which mind is studied without reference to the body. From such metaphysics we desire as complete a separation as we do from priestly associations. The psychology of medicine has nothing supernatural about it. It studies and deals with mind only in its relation to the body; and it is by the aid of the laws evolved from this study, and by no other means, that medical men endeavour to show how mind can be saved from disorder, and how it can be restored to health.

I have now explained and illustrated as well as I can the *three* leading principles which have served as the basis of the different classifications of mental diseases. Nearly all others are merely modifications of these. The two first of those alluded to depend on the character of the mental phenomena, the divisions of one of them being determined by the manifestation in these phenomena either of excitement, depression, or loss; the divisions of the other being determined by the particular faculties of the mind which appear to be involved—the intellect, the emotions, the propensities, or the volition. The principle of these two classifications is easily understood. There is no attempt in them to link the disorder of the mind to its origin. But it is the very principle or basis of the third classification to do this. In it the mental phenomena are merely symptoms or signs, and its divisions are determined by the nature of the bodily states which give rise to these symptoms.

I stated at the outset that it was my object not so much to disclose and advocate a particular classification as to speak about those which have been proposed, in such a manner as to exhibit the principles on which they are founded, and the sense in which these are correct or serve useful purposes.

With this object in view, I proceed now to discuss more generally the value of the different classifications.

The first consideration which suggests itself is this:—There must be something about Pinel's old divisions into mania, melancholia, dementia, and idiotcy which makes them practically useful, whether they rest on a sound basis or not. Were it otherwise, they would scarcely have held their ground so successfully. Now, this is true. They *are* useful divisions, and I do not see how we could practically do without them. But it is very important that the nature of their usefulness should be rightly understood. Otherwise, they become injurious. I do not know if my meaning will at once be seen, but I think the nature of this usefulness is correctly set forth when it is said that it may be a good classification of the mentally diseased, though a bad classification of mental diseases. In other words, there is often a practical utility in dividing insane persons into maniacs, melancholics, dements, and idiots, but no accuracy in dividing their insanity into mania, melancholia, etc. For instance, a division of insane persons into the excited and violent, the apathetic and depressed, the idiotic and helpless, may be useful in that part of their medical treatment which relates to care and management. This being so, it is probable that we shall always speak of maniacs, melancholics, dements, and idiots; and, for certain purposes, the insane will continue to be grouped in our mind according as their mental disorder exhibits excitement, depression, or defect, without reference to the origin of that disorder. Thus, if a man's insanity be characterized by excitement and violence, it may lead to his removal to an asylum; while if his insanity be characterized simply by feebleness of intellectual power, he may be allowed to remain at home. Yet both insanities may be due to the same cause. The arrangements for the nursing and care of a group of helpless slavering idiots will be very different from the arrangements for a like number of violent and destructive maniacs. I say violent and destructive maniacs, and the very use of the words *violent* and *destructive* here illustrates the point of which I speak. There are maniacs and maniacs. There is a mania which is attended with but little excitement, and a melancholia which is by no means profound. Hence we speak of the violently maniacal, the deeply melancholic, the utterly demented, and the helplessly idiotic; and we have often a useful practical purpose to serve in thus indicating not only the character of the mental phenomena, but also the degree of that character.

In medical jurisprudence, again, we cannot avoid a classification of the insane according to their symptoms. Questions of capacity and responsibility refer directly to the kind and degree of mental derangement which the patient exhibits, and not to the pathological nature and origin of the patient's condition. These are questions of fact, which are answered by the actual symptoms. The law does not concern itself with the cause of the insanity. It merely wishes to know if disorder of the mind exists, and also if it exists to such an extent as to take away civil capacity, or give immunity from punishment.

Dr Blandford, in his recently published and valuable Lectures on Insanity and its Treatment, holds very much the same views as those which are here expressed.

In their proper place, then, Pinel's divisions have their use, but when they are allowed to become true forms of mental disease, it is a scientific blunder, and harm is done. It leads to contentment where there should be no contentment; it stops inquiry where inquiry should begin. We say of a patient that he labours under melancholia, and having said so—though the word in itself is nonsensical—we are apt to have the satisfied feelings of one who has given an opinion with a scientific meaning and value. But all we have really done is this: we have described a symptom; we have said that the mental phenomena in the patient's case show depression, and not excitement. In short, we have only declared that the patient is dull, depressed, or sad; but we have not in the slightest degree indicated what the cause of that dulness and depression is. It is just as if we said of a patient that he had a quick pulse, and stopped there, without going on to say that he had this in consequence of an attack of typhus or of scarlet fever, or of some local inflammation. It has been well pointed out that we never think of classifying respiratory diseases under the heads of hurried, slow, spasmodic, and deficient respiration. Yet we might as correctly do so, as make mental excitement, depression, or defect, distinct pathological species.

The fact is, a man may be imbecile or melancholic in the morning and maniacal at night. Indeed, in certain insane persons, fits of excitement, depression, and stupidity succeed each other in such regular order, that their condition has been designated *La folie circulaire.* Such persons go out of one class into another and another, and back again—their real disease being all the while entirely unchanged.

Many persons, on the other hand, are unquestionably insane whose mental state is such that we scarcely know whether to class them with melancholics or with maniacs—neither excitement nor depression being a prominent character of the mental action. Still further, mania and melancholia may be implanted on dementia; that is, we may have a dement who becomes maniacal without losing his dementia. Where would *he* stand? Under what form of insanity would *he* labour? Then, again, a state of mania almost surely passes into dementia if it lasts long enough. The transition, however, is not abrupt and sudden, but gradual; and if so, at what point does the patient cease to labour under mania, and begin to labour under dementia?

But I need not further illustrate either the weakness or the value of this classification. It must be clear to all that mania, melancholia, etc., are not diseases, but mere signs of disease, which may properly enough be compared with such signs of disease as the quick pulse, spasmodic breathing, hot skin, etc. It may often, as I have shown, be useful to arrange insane persons according to some common character of their mental symptoms, and this will do no harm so long as the nature of such divisions is correctly understood;

but whenever these divisions come to be regarded as involving distinct forms of disease, then harm is done—we stop with a symptom instead of going to its cause.

The more we do this last—that is, go to the cause—in dealing with insanity, the more useful will medical men be to the community, and the more dignified will be their attitude in relation to mental diseases. It may lead very often to the discovery and avowal of ignorance, but it will lead also as certainly, in the long-run, to an increase of knowledge, and a greater power to be useful.

In our endeavours to get at the cause—the real pathological state which gives rise to the insanity—we shall, to a certainty, be often baffled. Even when we are in the most favourable circumstances for making the inquiry, this will be the result. But it will happen with peculiar frequency in the circumstances in which we generally stand. *First*, because most of the cases of insanity which are submitted to us for opinion or treatment are a long way from their cause; *secondly*, because the causes of insanity are almost invariably of an exceedingly complex nature; *thirdly*, because, as a body of medical men, we have not yet been properly educated into a knowledge of the relations of corporeal to mental states, and we fail now to recognise what, with a sounder training, we might more easily do.

With reference to the first of these difficulties in getting at a rational classification, Dr Blandford well remarks that—"If we can examine the individual at the outset of the disorder, and thoroughly ascertain his history, we may be able to lay down with considerable accuracy his pathological condition." At this stage he may be neither maniacal, nor melancholic, nor demented. We may be dealing, in fact, rather with signs of approaching than of existing insanity, and it is then, of course, that the pathological origin of the disorder is most apparent. It is then, too, that the case is usually under the care of the ordinary physician; and, lastly, it is then, far more than ever afterwards, that the art and science of medicine can be of use. In perfecting a system of classification like that of Dr Skae, we must therefore look for help from those who see insanity at its outset—that is, from the general body of medical men; but we shall look in vain for large help from that quarter till we have prepared them to give it by suitable instruction.

When the insanity is of many years' standing, all trace of its origin is generally lost. The pathological condition which gave rise to it may, in fact, be past and gone. In this way there is a very large number of cases which, in the present state of our knowledge, we should not be able to classify. But this is a difficulty which should stimulate to exertions to overcome it, since we know that in every case, whether we can detect it or not, there must have been such an origin.

There are other cases, however, which, from the very outset, are involved in obscurity. The insanity may come by an explosion, or it may grow most insidiously, and in neither case may we see any evidence of bodily disease to yield a satisfactory explanation. But here, too, we should only be stimulated to further search; and we are encouraged by the fact, that such seemingly hopeless inquiries have already yielded the fruit of success.

There is evidence, indeed, that this classification of mental diseases, or more correctly, perhaps, this standpoint from which we are to regard insanity, has taken possession of the medical mind. We cannot need a better proof of this than we find in the titles of the papers which, during the last six years, have filled our journals both in this country and on the Continent—such titles for instance as these—On Rheumatic Insanity, On Choreic Insanity, On Epileptic Insanity, On the Insanity of Pregnancy, On Puerperal Insanity, On Hereditary Insanity, On Phthisical Insanity, On Cancerous Insanity, On Climacteric Insanity, On the Insanity of Pubescence, On Sympathetic Insanity, On the Insanity of Lactation, On the Mania of Alcoholism, On Syphilitic Insanity, etc.

The opinions of many systematic writers, too, appear to be undergoing a change. Dr Maudsley, for instance, in his Gulstonian Lectures, recently published, has somewhat altered his position. He says, "The hope and the way of advance in our knowledge of mental disorders lie in the exact observation of the varieties of the insane diathesis, and of the effects of bodily functions and disorders upon these; in noting carefully the bodily as well as mental symptoms that characterize the several forms of derangement of mind; and in tracing the relations of mental to other disorders of the nervous system."

All this shows the direction which has been given to recent inquiry.

The first effect will probably be greatly to increase the twenty-seven groups of Dr Skae; but there will then begin a grouping of the groups, as some common pathological origin is detected; and in the end, I believe, we shall get to a very much smaller number than that with which we may be said to have started. And as we do this, we shall, in all probability, be at the same time reaching a classification which will more and more correctly admit of being described as resting on pathology.

Even then, however, we may find it useful and convenient to talk of diseases of the mind—of disorders of the intellect—of the physiology and pathology of the mind—of mania, melancholia, and dementia; but we shall know exactly what we mean by such terms, and we shall not be misled by them. We do not now speak of diseases of the sight, but of diseases of the eye; it will be a long time, however, before we are in a comparable position as regards insanity. In the meantime good work, in a right direction, is being done, and insanity has the hope of becoming, more correctly and fully than it ever has been, a part of medical science. The only secure foundation of the therapeutics of mental diseases, as well as of their classification, lies in a knowledge of their nature and origin. The less we know of this, the feebler is the art of healing. Feeble it is at the best, but the more of such knowledge we have, the stronger grows our ability to avert and cure. To get at that knowledge is admittedly difficult, for the altered mode of action of the mental faculties is often the only sign of disease in the insane. It may be so prominent as to mask the corporeal disease to which it is due, and the general health of the patient may appear to be good. The connexion between bodily or cerebral and mental states is often most obscure; the result perhaps, in many instances, of our imperfect knowledge of the functions of the different parts of the brain. "For although the brain," as Schroeder Van der Kolk observes, "has been most accurately investigated by anatomists, and has been described in its minutest details, yet Richerand's assertion still holds good, that the physiological anatomist finds himself here in the same case as the Parisian porter, who knew indeed all the streets and alleys, to the smallest, but did not know what happened in the houses."

ARTICLE II.—*Notes of a Case of Ovarian Disease—Ascites—Anasarca—Solid Tumour in both Ovaries.* By W. J. MARSHALL, M.D. and L.R.C.S. Edin.

(*Read before the Greenock Medical Society, 6th March.*)

ABOUT the middle of November 1870, I was called to visit Miss A. R., æt. eighteen, a pupil-teacher. She was a rather pale and delicate-looking girl. She was then suffering from a slight catarrh. I was informed that she had always enjoyed good health until the month of June, when she had ceased to menstruate. Except being more easily fatigued, and finding her abdomen latterly increasing in size, she did not suffer much uneasiness, and continued to attend to her duties at school till I saw her. About July she first felt as if something moved in her abdomen, and some friends began to remark upon her altered appearance; but, strange to say, her mother did not notice anything unusual till shortly before my visit.

After one or two examinations at intervals of a few days, the following facts were noted, and a diagnosis arrived at:—The abdomen was found considerably enlarged, measuring 34½ inches in circumference at the umbilicus. The skin of the abdominal wall was œdematous, and fluctuation was detected by palpation. On sudden pressure a sensation, as of fluid being displaced, was communicated to the palm of the hand, which came down upon a solid body lying to the left side, and stretching, as made out by combined percussion and palpation, from the brim of the pelvis to as high as the umbilicus. Per vaginam, the cervix uteri felt rather elongated and pointing forwards. On pressing between the finger in the vagina and the hand laid upon the abdomen, a sensation of fluctuation and of a solid body in fluid was communicated, a sort of quasi-ballottement. As the amount of fluid increased in the abdomen this sensation was no longer felt. On pressing upon the upper extremity of the tumour the cervix uteri was unaffected; but on pressing in close upon the pubes, a movement could be communicated to the cervix uteri. The urine was pale, depositing mucus, sp. gr. 1025, and no albumen was then detected by heat or nitric acid. Immediately after one of my examinations the patient menstruated for the first time for five months. The diagnosis was made of a tumour of the left ovary with ascites; but from the œdematous state of the abdominal walls, and the amount of fluid in the peritoneal cavity, nothing more definite as to the character and relations of the tumour could be made out.

I recommended my patient to consult Dr Thomas Keith of Edinburgh. She travelled to and from Edinburgh in one day, in the beginning of December. Dr Keith expressed an unfavourable opinion of the case. The fatigue and excitement of the journey seemed to exert a prejudicial influence on the patient. The feet, legs, and thighs became very œdematous. The abdomen rapidly increased in size, till it measured 37 inches at the umbilicus. In the middle of December she again menstruated, and for a few days the urine became mixed with mucus and pus and deposited albumen. She began to suffer from cough and difficulty of breathing, and signs of fluid in the left pleural cavity were observed in the beginning of January. The face became œdematous, especially on the side on which she could lie with most ease (the left). She also suffered much from flatulence, and occasional vomiting and purging. The pulse rose to about 140, and became very weak. On the 6th of January it was reported that she had become so faint once or twice during the night that her mother thought she was about to die. She, however, rallied a little and began to make more water, which became clear and free from albumen. The œdema and ascites diminished very greatly, leaving white streaks on the skin of the thighs, legs, and abdomen, such as are seen on the abdomen of women who have borne children. A day or two before she died the abdomen measured 35 inches, but the signs of effusion in the pleural cavity were more pronounced; and she died, rather suddenly, on the 24th of January, on making some movement while sitting up in bed.

The treatment in this case consisted in giving mild diuretics and diaphoretics, and latterly stimulants when the system became more exhausted. The propriety of tapping to give relief to the great distention and difficulty of breathing came up for consideration. Dr Wallace saw her with me in the month of December, with a view to deciding upon this point. We agreed to defer the operation as long as possible, since the general symptoms were so untoward.

Dr Keith also saw her again in the beginning of January, and he was likewise of opinion that paracentesis should not be performed unless it was urgently called for. It was well it was not done; for when the patient seemed at the worst, the kidneys began to act more freely, and the general dropsy was very much reduced before her death.

Dr Keith did not consider the case at any time suitable for ovariotomy, and seemed inclined to the opinion that the tumour was malignant. The rapidity of its growth, and the amount of ascites and general dropsy accompanying the tumour, were elements in favour of such an opinion.

On the 26th, with the assistance of Dr Wallace, an examination was made of the abdomen. On opening the peritoneal cavity, about a wash-hand basin full of a clear and rather deep yellow-coloured serous fluid escaped. There were no signs of peritonitis; the uterus was found natural in size; both ovaries were much enlarged, and of a kidney shape. The left, which was about six inches in its long diameter and three in its transverse, lay diagonally across the abdomen, the lower end lying just behind the fundus uteri, and the upper stretching into the left side of the abdomen to the level of the umbilicus. The right ovary was about five inches by three inches, and lay up and down behind the uterus —the upper end just appearing behind and above the fundus uteri, and touching the lower end of the left ovary—the lower end lying in the hollow of the sacrum. On being cut into, both tumours were found solid, and of a rather pale flesh colour. At some parts the colour was deeper apparently from congestion, and this was especially marked in the lower end of the right ovary, which lay in the hollow of the sacrum. A few small cavities about the size of peas, containing clear fluid, were seen here and there through the structure, and one or two small deposits of a yellow cheesy matter were found in similar cavities near the surface. The great bulk of each tumour was of a solid fleshy consistence and colour, and was traversed by vessels of considerable size, many of which were filled with thrombi. A small portion of the cheesy matter was examined under the microscope by Dr Wallace and myself, and exhibited small nucleated cells, and a few fat cells. A small portion of the fleshy matter exhibited a great number of small nucleated cells, principally of an oval shape, a few granular cells of a larger size and a few fibres running through the mass of nucleated cells.

Dr Wilson Fox of London also examined a portion of the tumour, and he writes:—

"It appears to consist of a purely fibroid structure. There are very few fibro-plastic cells, and no traces of glandular structure. The fibrous material consists of a very dense interlacement of fibres, and closely resembles the natural stroma of the ovary. In fact, judging from this small piece, I should say that it represents a hyperplasia of the ovarian stroma, in contradistinction to the growths consisting of a hyperplasia of glandular structure. There were some indications of non-striated muscular fibres, but I do not feel very certain about these."

The other viscera of the abdomen seemed natural in size, colour, and consistence, but were not cut into. The chest and head were not examined.

As the patient's health was not much affected when I first saw her, the diagnosis was a matter of some perplexity for a time. The tumour, on external examination, felt very much like the uterus enlarged. It was not till one or two examinations had been made that it was evident that the tumour was separate from the uterus. One attempt was made to use the uterine sound, but it could not be passed more than one inch, and it gave so much annoyance that it was not employed again. The return of menstruation, taken in connexion with the elongated cervix, and the absence of placental souffle or fœtal pulse, negatived the idea of pregnancy.

The peculiar relation of the two ovaries explains how they felt as one mass. They lay in close apposition above and behind the uterus, so that, on pressure per vaginam or on the abdominal wall, motion was communicated through the one tumour to the other. This also accounts for that sensation of quasi-ballottement, which was somewhat deceptive in the earlier examinations.

Solid fibrous tumours of the ovaries seem to be rare, and are generally of a much smaller size than was attained in the present instance. There is an interesting case (in which both ovaries were enlarged to about the same size as in this case) mentioned by Dr Bright in his work on "Abdominal Tumours" (Syd. Soc. ed., p. 146).

I have ascertained that my patient's father and a sister of her mother's both died of consumption. It is interesting in this connexion to note the existence of tubercular matter in minute spots on the surface of both ovaries, evidently secondary to the fibrous degeneration. Rokitansky says:—"The occurrence of tubercle in the ovaries is at least doubtful; so far as our own investigations and observations go, we must deny it altogether."

ARTICLE III.—*Notes of a Case of Scleriasis.* By WM. CURRAN, L.R.C.P. Edin., M.R.C.S. Lond., etc., Army Medical Staff.

THE strange cutaneous condition called scleriasis is so rare in this country, and the disease was so well marked in the case under review, as to call for a special record for itself, and the following statement, based as it is on long personal intercourse with the subject of it, will, it is hoped, fairly describe its most salient features, and convey, at the same time, some idea of its history and progress. It was first drawn up at the instance of a high official authority, in view to its appearing in the pages of the departmental blue-book; but the materials for that ponderous compilation having been already so far adjusted as to preclude the possibility of its insertion in this year's issue, it had to be withheld, and hence the cause of its publication elsewhere. The case is transcribed almost *verbatim* as it stood in the original. It is the only instance of the kind the writer has ever seen, and he hopes its perusal may prove as interesting to others as its observation did to him.

The subject of the disease, No. 1556, Private G. E., of the 2d/11th Regiment, was admitted for treatment to the General Hospital, Phœnix Park, near Dublin, on the 4th December 1870. He is 29 years of age, and has eleven years' service, some eight or nine of which have been passed abroad at the Cape, and he looks the very *beau idéal* of rude and vigorous health. On admission, he was found by the officer then in charge of his ward to be suffering from an affection of the skin, or rather perhaps of the subcutaneous cellular tissue, which rendered the integument all over the body hard, brawny, and slightly redder than usual. This redness or suffusion is more observable on the face than elsewhere, but it extends also over the chest and trunk, and imparts to both a tense, shining, and somewhat tanned or mummified appearance. He says, however, that he was always of a reddish or ruddy complexion; but this is not the only or even the most noticeable feature of his case, and the immobility of the countenance, and the absence of expression in the face, are more calculated to attract attention. The skin is everywhere hard, tense, and immovable; the tension of the cheeks prevents the mouth being widely opened; the play of the facial structures is in great part lost, and he cannot raise the brow or move the hair in consequence of the rigidity and stiffness of the skin over the occipito-frontalis muscle. His general health is good, but he suffers occasionally from a feeling of giddiness and headache, of however no great severity. He complains of a numbness at night in the side or part on which he lies in bed, and his movements are impeded by the tightness of the skin over the patellæ and other joints. He also complains of a slight feeling of cold or chilliness on lying down, but the temperature, as ascertained by the thermometer, has never varied, and now stands at 98·4°. The pulse is quite normal, and the other functions are discharged with regularity and ease.

His history is a peculiar one, and the leading features of his case are equally so, and both point unmistakably to a condition of the integument which has rarely been witnessed, as far as I can determine, in an equally authentic or pronounced form, in this country. When seen by me for the first time, early in February of the present year, he was suffering from a hardness and rigidity of the skin over the whole surface; the integument of the face was tightened, brawny, and shining; he was, in fact, hide-bound all over, and the want of the power of expression in the countenance was very conspicuous.

He cannot open or purse out the lips to their natural extent; any attempt to frown or raise the brows fails to produce wrinkles on the forehead, and even laughing is productive of inconvenience. The skin covering the neck, chest, shoulders, arms, and legs is similarly affected; it feels, in a word, like a flitch of bacon, and as if it had received a coating of varnish or putty. The only parts that have escaped are the genitals, and, to a lesser extent, the upper eyelids, and the former appear to retain their usual size and outline. He also retains the sexual instincts and inclinations natural to his period of life; and this feeling, coupled with the absence of other constitutional symptoms, would seem to point to a local origin for his ailment. Though the surface looks œdematous, it does not pit anywhere on pressure, it cannot be raised in folds or made to move by friction, and, except that it is not cold, it "gives to the hand the sensation of touching a frozen corpse." Percussion of the lower part of the chest elicits a dull, heavy, leathery thud or sound; the abdominal walls feel stiff and brawny, as if something solid were let into their substance; and I am sometimes tempted to compare the impression made on me by palpation to that which is produced by feeling newly killed fat bacon, or—though in a smaller degree—parts affected by anasarca, phlegmasia dolens, or phlegmonous erysipelas. And yet it is neither one nor the other; it has something peculiar in itself, which can only be realized by actual touch, and which scarcely admits of being conveyed by description; and, of course, it differs from all three in not retaining any marks of pressure.

As in most of the cases that have been recorded, so also in this, the disease would appear to have commenced in a small spot or patch which appeared on the back of the neck, about the middle of January 1869, while he was serving at Cape Town. He can assign no cause for its appearance, and he adds that, after remaining stationary for three or four days, it began to increase in area round the neck, and then creep downwards gradually over the arms, trunk, and abdomen. It has all along produced a feeling of tingling and numbness in the parts on which he lies in bed, and though, as noticed before, there is no evidence of diminished temperature, friction and baths fail to produce perspiration. He cannot now raise the arms higher than the shoulders or freely finger the back of his head, and there is so much stiffness and catching under the armpits as to render it difficult for him to dress. On the 18th of March last I made the following note of his condition:—"This man has done little or no duty within the last twelve months, and his complaint has been stationary, or at most very slowly progressive during that time. As noticed before, it commenced in a reddish itchy patch of small size—not exceeding that of a florin—in the back of the neck, which felt at first painful and tender, but subsequently regained its normal tone, and which, increasing in area as it advanced downwards, ultimately extended to and implicated the whole body. His weight remains unchanged, but the skin is now so rigid, tense, and unyielding, as to resemble gutta-percha, and prevent him from rotating his arms, running with speed for any distance, or even walking continuously without inconvenience. It is tighter, however, in some parts than in others, and especially so over the malar bones, on the neck and chest, and under the armpits; and though the whole of the cutaneous surface, 'from the sole of his foot to the crown of his head,' from the occipital protuberance to the orifice of the anus, ay, and back again the other way, is tight fitting, tense, and indurated, he yet appears to enjoy life, and there is very little, if any, diminution of temperature, and none, as far as I can judge, of sensation or secretion."[1]

Treatment.—The treatment has been as various and exhaustive as the circumstances of his case or the appliances at the command of his professional attendants would allow. Every variety of bath has been resorted to, every combination of purge has been exhausted. Diaphoretics afford no relief, and bromide of potassium, nux vomica and alkalies, have been tried in vain. Nothing, in fact, seemed to reach the root of his disease or modify its character, and mercury to ptyalism, by inunction and otherwise, has made no impression on it. The same may be said of arsenic and shampooing, though it is but fair to add that these had not had sufficient time or trial, and he was brought before an invaliding board, for the purpose of being discharged from the service, before anything else could be tried. I anticipate that nothing but time, and that alone, will be able to influence the character of the disease, or modify its progress in the future.

Remarks.—The disease described above is so rare, that there has not been much opportunity of investigating its history or mastering the details of its pathology and causation, and the little I know of either is derived from an article on the subject in the "Guy's Hospital Reports for 1867," Series III., vol. xiii. p. 255-282, etc. The writer of that able paper, Dr Hilton Fagge, after quoting from various sources the cases of the disease that have been from time to time placed on record, says: "Its essential feature is a rigidity, beginning generally at some one spot, and rapidly spreading over the whole of the upper part of the body. In four of the six patients—whose cases he summarizes—it began at the back of the neck; in one, the part first affected is not mentioned; in the remaining case it began at the epigastrium. In this case the whole body is said to have been rigid, but in all the others the disease ceased at some line or other on the trunk. The parts hardened were so uniformly, but in one case the eyelids remained free, the rest of the face being affected; and in three instances the hands escaped the induration, which extended down to the wrists." In my case the genitals are the only parts that have *entirely* escaped, and there is no line of separation or demarcation anywhere. Again Dr Fagge says, "Pathological Transactions of London," vol. xx. pp. 403–409: "The essential feature of the *sclérème* of Thirial is the existence of induration and rigidity of the skin, beginning at some one spot, and rapidly spreading over a large part of the cutaneous surface."

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[1] In reference to this point, Dr Fagge has the following, at page 283 of his able and exhaustive paper (quoted below), to which I must refer for further particulars, and which I commend most strongly to the perusal of all who are interested in the elucidation of this rare disease:—" M. Thirial elsewhere states that in these cases"—namely, those reproduced—" there was neither change of temperature, impairment of sensation, nor diminution in the secreting action of the skin." Such was also the case with my patient in regard of the two former, but I believe I might bake him in an oven or bray him in a mortar without producing a *copious* perspiration.

I had a photograph taken,[1] which, however, does not show much, and can, indeed, scarcely be expected to do so, inasmuch as the disease is entirely subcutaneous, confined to the rete, or at farthest to the connective tissue, and due probably to a proliferation of cell-growth, the extent or amount of which can only be determined by the microscope. Whether the follicles are involved or not, I cannot undertake to say, and I am not aware that their share in its production has been as yet clearly defined. The photograph shows, nevertheless, the extent to which the arm can be raised, and that too by the aid of a little hitch or inclination which the patient has unconsciously taken to the opposite side; it shows the depression of the umbilicus from bulging, and prominence on the part of the abdominal walls, and a general contour of rotundity and *embonpoint* which can scarcely be credited in a state of health to so young a man. Dr Fagge recognises the existence of a complete chain of links[2] between the *sclérème* of Thirial—who first described or indentified the disease—and the keloid of Addison, but he refuses to acknowledge its relationship to leprosy; and, by so doing, differs *in toto* from the views of Erasmus Wilson and other dermatologists. Finally, and this is perhaps the most interesting point in the whole inquiry, he says that "the prognosis appears to be favourable;"[3] and adds, "In all the cases hitherto recorded, in which the patient has remained under observation, the skin has sooner or later returned to its natural state." I read this passage to my patient, and encouraged him, somewhat against my own conviction, however, to look forward with hope to the future. It was, I am sorry to say, the only aid or comfort I could afford him under the circumstances.

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[1] The photograph is not reproduced, for the reasons stated in the text, and others, that will obviously occur to the reader.

[2] With regard to this point, Dr Fagge says—"I have also brought forward cases to show that, between the two affections described respectively by Thirial and by Addison, there is a complete chain of connecting links in cases recorded by different observers, and that, if not included under one common title, they ought at least to be regarded as the opposite extremes of a series rather than as absolutely distinct."—*Transactions of the Pathological Society of London*, vol. xx. pp. 408-9.

[3] I am afraid that Dr Fagge's hopeful and kindly anticipations in respect of the prognosis of this disorder are not likely to be realized in the case reviewed above, and I can *now* recall some features of it which escaped my notice before, and which induce me to believe that the disease is progressing slowly but surely towards its natural termination. This, too, is the opinion of a friend in whose judgment I have very great confidence; and every physician is aware that a casual professional visitor may often observe changes in his patient

ARTICLE IV.—*On the Mode of introducing the Midwifery Forceps; with Note on their Modification.* By JAMES CAPPIE, M.D.

(*Read before the Obstetrical Society of Edinburgh, 10th May.*)

I HAVE no intention to furnish a complete essay on the midwifery forceps. I shall not at present discuss the various interesting points that bear on the questions as to when to use them, or how to work with them when applied. I restrict myself to a single point in their management; and one in regard to which, if we were to judge from the uniform instructions given in manuals of midwifery, it might be supposed there could be very little opportunity to suggest anything novel. In the directions for introducing the blades an almost stereotyped phraseology has been used by one writer after another, and as the practice I have been in the habit of following is in some particulars different from these directions, it may not be useless to bring the subject before this Society. I shall not be surprised, however, if I find that the plan I have now to suggest is one very frequently followed in practice, although not even alluded to in the ordinary text-books.

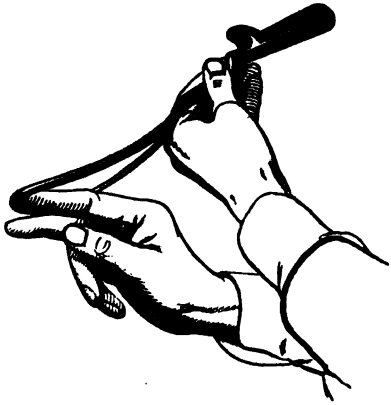
The instruction I have to criticise is, that in introducing either of the blades, it is to be held lightly in the right hand, and that two or more fingers of the left, introduced into the vagina, should guide the point of the instrument, and guard the parts of the mother; and the amendment I have to submit is, that the task of introducing, guarding and directing should be trusted entirely to the fingers of the right hand, and that, in the first stage of introduction, the left, crossed over the right wrist, should have little more to do than to support the shank or handle of the instrument. The advantages of this plan are that the ordinary obstetric position does not require to be disturbed,—that in many cases the instrument can be used positively with greater facility,—and, at all events, that in this way it can be applied in instances where it would be almost impossible in the ordinary way.

which are apt to be overlooked or ignored by the regular attendant himself. As regards the termination referred to above, if what I heard of one of Dr M'Donnel's cases before I left Dublin be true—and I have no reason to suppose otherwise—it resembles that produced by leprosy; and influenced by this and other considerations of a like kind, which need not be detailed here, I am inclined to believe that a closer relationship will be found to exist between these two complications than Dr Fagge is willing to allow.

At the outset, I must mention that my remarks are intended to apply to the double-curved instrument. My experience of the straight forceps has been limited, and, so far as it goes, decidedly unfavourable. In leverage power, and in the thorough command we have over it, it is greatly inferior to the long forceps.

The first objection I have to the ordinary instructions is the awkward position in which we are directed to place the patient. She is to lie as much as possible right across the bed, and, according to some writers, the nates are to be made to project over its edge. To put her in this position, of course involves trouble to the patient, and all the anxiety to her and her friends that attends preparations for what is regarded as a serious operation. It will not be denied that, when it has been determined to use instruments, the less formidable the procedure can be made to appear to the patient and her friends the better. Other things being equal, that plan should be adopted which can be gone about in the quietest manner. The position across the bed, however, is quite necessary if two or more fingers of the left hand are to be introduced into the vagina. When the perineum is relaxed the ostium vaginæ dilates, not from before backwards, but more nearly in the direction of a line drawn in continuation of the symphysis pubis. The twisting of the left wrist, therefore, would be extremely awkward if the body of the patient is not kept well forward.

With the plan I have followed, and would now advocate, the ordinary position does not require to be interfered with. The patient simply requires to be conveniently near the side of the bed. In very many cases it is a matter of indifference to myself whether she be lying on her back or on her side. If she is not under chloroform, and is anxious to facilitate procedure, I prefer a posture between the two. The right thigh can thus be more readily managed than when she is lying fairly on her side.



In regard to immediate management, we may take one of the simplest cases, where the head is at the outlet and the perineum is relaxed. An examination being made in the ordinary way with the right hand, the blade to be applied first—that is, in most cases, the lower or left iliac blade—is held in the left hand (which, as I have already said, is crossed over the right wrist), and the point directed to the margin of the outlet. If the perineum be well relaxed it will at once slide within the vagina, along the side or inner surface of the finger.

Or, allowing the middle finger to remain within or at the edge of the vagina, the forefinger is made to catch on the inner rim at the rounded end of the fenestrum, and to draw the point cautiously onwards. If the patient be stout and the perineum thick, a little care is necessary to prevent any fold of skin or mucous membrane being caught by the edge of the instrument. One or other of the fingers feels cautiously round while the point is being coaxed onwards; for, of course, through all the stages of introduction and adjustment any great amount of force is out of the question.

The more firm the perineum is, the more necessary is it for the handle of the instrument to be directed well forwards. If the outlet of the pelvis be contracted, the handle may with advantage be even inclined to some extent across the left thigh, so that it is made to describe a complete half-circle as the blade is being made to sweep round into its proper position on the head.

When the point of the instrument is fairly within the vagina, its progress and direction are at first to be trusted almost entirely *to the forefinger pushing on the rim of the fenestrum.* I believe those who have never tried this plan will be surprised to find how easily it can be urged onwards, and how safely the proper direction can be given.

Of course, the direction for the first blade is, as a rule, first backwards along the perineum towards the sacrum, and then downwards and forwards, so that the outer surface of the instrument is toward the left ilium; and for the second blade, it is first backwards and then upwards and forwards, so as to lodge it between the child's head and the right ilium.

As long as the rounded point of the instrument is within reach it is pushed onwards by the forefinger, and the left hand has scarcely anything more to do at this stage than to allow the handle to rotate, and to be elevated or depressed according to circumstances. When the finger has pushed it onwards as far as it can reach, the left hand becomes the propelling force. The forefinger, however, still acts at any convenient point as a fulcrum to assist in giving the proper direction to the blade, while the hand gives the rotating and forward movement. If the os uteri has previously been slipped over the child's occiput, there is usually no difficulty now in at once adjusting the blade to the proper position on the head.

In this process there is wonderfully little risk of any injury being done to either mother or child. Ramsbotham indeed remarks, that if "a circular sweep of a portion of the pelvis is made, the maternal structures might be endangered." But it is really difficult to conceive how such an accident could happen, except by the grossest carelessness. When the perineum is at all distended, the surface of the vagina is so smooth that it would be difficult, even intentionally, to make the edge of the instrument to catch on any fold of the mucous membrane. If the head is high in the pelvis the probability of doing so is still small, and may be avoided by the most ordinary care. I have applied the forceps in the way now described for twenty years, and have never met with any accident to the maternal passages by the sweep of the instrument. In regard to the progress of that part of the blade which is out of reach, the operator has first to have a clear conception of the direction he wishes it to take, and then to proceed with the caution, but, at the same time, with all the confidence that the surgeon has in passing the male catheter.

If the os uteri is still felt all round on the head, the *tactus eruditus* of the forefinger comes to be of great assistance. The instructions usually given to introduce the fingers of the left hand within the os, and to feel for the child's ear, appear to me to be not only needless but to be cruel to the patient, and indeed the attempt must often be difficult for the operator. The forefinger by itself, being intimate with the topography of the localities, can at once determine the position of the instrument relatively to the passages and the child's head. It not only takes up greatly less room, but it is positively more efficient. It is usually a very simple matter to introduce the point of the blade within the os, especially if the latter has been pushed low into the pelvis. When it is not easily reached, the method of procedure resembles what I have detailed for introducing the blade into the vagina. First, the finger tilts on the os, while the left hand cautiously advances the point of the blade till it rests on the child's head. Then the finger hooks itself into the fenestrum, and, if possible, keeps the point sliding along the scalp till it catches the lip of the os and is pushed within it. The part at which I prefer to enter the instrument within the uterus is, for both blades, at the posterior or sacral portion of the os uteri.

If the point has passed the os, and we are uncertain whether it is outside or within the lip, all that is necessary is to draw back the instrument slowly while the finger is resting on the os. If it be within the lip, it will be caught on the tip of the finger, and no hesitation need then be felt to urge it steadily onwards, and to give the necessary rotatory impulse to bring it into position.

It may sometimes be an advantage to be able to apply the forceps although the os uteri is not completely dilated, as in cases of severe convulsions, when uterine action is completely in abeyance, and the only hope for the mother is in the speedy termination of the labour. Now, in the manner I have described, the forceps may be passed into the uterus when the os is scarcely more dilated than just to admit the breadth of the blade. On this point, however, I shall not at present dilate, as I have brought it before the Society on a previous occasion.[1]

In regard to the introduction of the second blade, the same general management is to be attended to. Introduced in front of the first blade, it is directed backwards along the perineum, and then upwards and forwards towards the right ilium. Here, as before, if the head be low in the pelvis, no difficulty is experienced in introducing it within the vagina, and in adjusting it on the head. If the outlet is contracted, the handle may be inclined across the right thigh, at the first stage of introduction, and a complete half-circle be described in the adjustment. If the perineum is thick, or the patient stout and with sturdy muscular thighs, a convenient mode of introducing the second blade is to project the handle so well forward that the left hand can support it in front of the thighs. When the patient is lying on her back, it can thus be passed with great facility. The forefinger again acts as the propelling agent in the first stage; and, according to circumstances, it does so either behind or before the shank of the first blade.

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[1] Edin. Med. Journal, Oct. 1868.

There is one point which requires a little study in the process of adjusting the second blade. Very often, when it is being made to sweep round to its position on the head, the handle is apt to be caught on the mattress; and this may sometimes be to an extent to make it appear to be impossible for the sweep to be completed. Usually a little coaxing will overcome the difficulty, but if this is not sufficient, all that is necessary is to get the patient to lie a little more on her back, and the handle may then be made to go round without interruption.

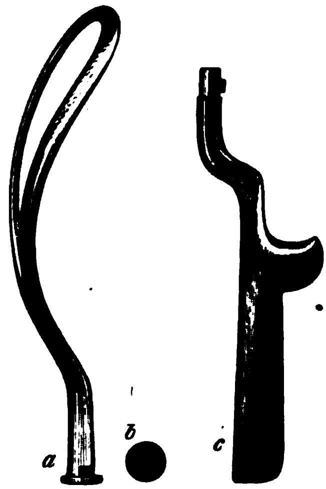
In regard to the locking of the blades I have nothing new to suggest. In most of the cases they lock readily with the first attempt. When they do not do so easily, an examination must be made to ascertain whether one of them cannot be better adjusted. I believe it will be found that if one of the blades inclines to fall easily out of position, that is the one which requires to be further introduced or rotated. It is seldom necessary altogether to withdraw either blade.

If the adjustment cannot be improved, some force may be employed to complete the act of locking. The shanks are brought into contact as near the lock as possible. Then each handle being held firmly, the one in the right and the other in the left hand, the thumbs are made to press steadily on the one side of the lock, and the forefingers firmly to support the anterior shank on the other side. The point of contact is the fulcrum, against which each handle, as a lever, is made to press from opposite directions. Considerable force can thus be applied, especially if the handles have transverse rests below the lock. Of course, the hands are ready to complete the locking as soon as the twisting or compression is sufficiently acomplished.

This paper might be considerably extended by considering what may be done in particular contingencies, but this is unnecessary. I wish my remarks to be taken as hints rather than elaborate details. I believe, indeed, it would be impossible to lay down rules that must apply to all the cases that one meets with in practice. A great deal must be left to the common sense of the practitioner in adapting general instructions to the peculiarities of individual cases. Where there is pelvic deformity, or mal-position of the head, or strongly developed pelvic ligaments, more depends on the mode of traction and general management than on the mere act of introducing the blades; but these are points on which I do not enter in the present communication.

Note on Modification of the Midwifery Forceps.

A few years ago[1] I showed an instrument at this Society, intended to be such a modification of the long forceps, that the shank being cut at the middle, a joint was contrived by which the pieces could with facility be joined or detached. The Simpson forceps could thus be made as portable as the common short forceps. In contriving the joint, there was a rather intricate mechanism of spring and catch, to prevent the pieces becoming too readily disjoined. After some experience, however, I have discarded this mechanism as quite unnecessary, and for several years have found the simple instrument, which I now show to the Society, to answer admirably.



The two portions are joined by what is known as the bayonet joint. On the blade portion, *a*, there is a socket, in the rim of which is a notch, *b*, which leads to a horizontal slit extending about one-third round the circumference of the socket. On the handle portion, *c*, is a nipple which fits into the socket, and on it there is a small knob which enters at the notch. When the nipple is fairly inserted, and a quarter turn is given to the handle, the knob slides along the horizontal slit, and the blade and handle portions have then exactly the same relations to one another that they have in the solid instrument.

In making the socket, it is very necessary to attend to the direction of the slit. In both blades the notch for receiving the knob of the nipple is opposite the concave *edge* of the blade, and the slit itself terminates opposite the concave *side*. It will then be found that, with either blade, the rotation necessary to join the pieces is in the same direction as the rotatory movement that must be given when the blade is to be adjusted to its position on the head.

On looking at the instrument as held in the hand, I dare say the first impression may be that the joints are insecure, as the tips of the blades appear to fall readily inwards. But it is to be remembered that in practical use the child's head is between the blades, and when they are locked the whole instrument is as immobile as the solid-stemmed long forceps. It is then an impossibility for either handle to slip away from its blade portion. The whole of the strain in compression and traction is thrown on the solid part of the socket.

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[1] Edin. Med. Journal, Dec. 1862.

In using the instrument, I first introduce and adjust the blades, and then join the handles. Sometimes, however, as when the head is at the brim of the pelvis, I may join the handle on the second or upper blade, to assist in the rotation necessary to place it in position on the head. I do not find that the blade, when once adjusted, tends to slip out of its place more readily than that of the ordinary instrument. After introducing the first blade, I have purposely left it alone for some minutes without finding it displaced. Indeed, one would naturally expect that the absence of the weight of the handle would be rather an advantage in this respect.

The act of joining the handles is a very simple process. The notch in the rim of the socket being felt for, the nipple is introduced with the knob opposite the notch. When fairly inserted, the handle of the lower blade is turned upwards, and that of the upper blade is turned downwards. The instrument now resembles the ordinary forceps, and locking is made in the usual way; of course, care is to be taken that the shank of the upper blade is in front of that of the lower when the handles are joined.

As, in my former paper, I narrated some cases to illustrate the advantages of this modification of the midwifery forceps, I shall not now detain the Society by further remarks. I may only mention that, after other nine years' practice, I have never experienced any serious difficulty in regard to the speculative objections that were urged against the instrument.

ARTICLE V.—*On Mining Exhalations.* By JOHN BOYD, M.D., Slamannan.

IN coal-mining, the first step is to sink a shaft down to the coal measures, at whatever depth they may lie. This operation consists in excavating a vertical pit, generally 12 feet by 9. When sunk through the various superjacent metals to the depth of from 20 to 100 or more fathoms, a large amount of *débris* is necessarily accumulated, and usually laid down in the immediate vicinity of the pit mouth, unless when, as sometimes happens, it is utilized in forming the branch to the main railway, access to which is essential to successful prosecution of this important line of industry. When the shaft has been sunk, and the above-ground machinery erected, the next proceeding usually is the building of cottages for the engine-keeper and pit-headman; sometimes a row of miners' houses are strung on to these, and the huge mound hems in a busy and populous neighbourhood. This *dirt-hill*, as it is termed, is composed mainly of the clay; then the freestone, and the various slaty, calcareous, and shaly strata which are met before the coal is reached; and the lower minerals are naturally spread on its upper surface, which is redolent of the gaseous emanations which pervade the workings below. Ferruginous and sulphurous salts are abundant. In warm moist weather, I have frequently thought I detected the characteristic evil odour of decomposing eggs in the atmosphere of such accumulations. At all events, when a dirt-hill is burning, the blue flame of generating sulphurous acid is discernible enough, and the red *blaize* which results from such incandescence testifies clearly to the presence of iron in the silicates.

For a considerable number of years back, I have been struck with the extra amount of sickness of an asthenic and zymotic type, which occurred in the clusters of houses in the immediate neighbourhood of the mounds in question. The true test of the sanitary state of any inhabited spot is the condition of the females and children who reside there, as these are more permanently exposed to whatever malarious influences may be in operation on their habitat. The number of cases of female and infantile sickness that arose within a score or two of yards from a dirt-hill, have certainly been much above the average of this cool and bracing district; and the difficulty of conducting such cases to a favourable conclusion has, in my experience, been unusually great. What first attracted my attention fourteen years ago to this subject was, the circumstances of three cases of slow obscure abdominal inflammations originating in two adjoining cottages lying north and east of a large dirt-hill two miles distant from this, and, from their situation, exposed fully nine months a year to the prevailing south-west breeze blowing over this mound, carrying its exhalations directly into them. The first, a large well-developed woman about thirty, some weeks after being confined of her second child, took a lingering attack of abdominal tenderness, feverishness, and debility, which culminated in an extensive abscess in the anterior interspaces of the muscles of the abdominal walls, and she never fully regained her health till she left the dwelling. Her successor in the same abode was affected with a sub-acute attack of metritis, which did not subside till she likewise left. The year following, a young married female of eighteen, who lived next door, had a miscarriage at the sixth month, followed by extensive pelvic cellulitis and peritonitis, terminating in a suppuration so extensive that one evening it burst at the umbilicus, and left her in a bath of pus. I measured about 30 ounces, besides what soaked into the bed. The distended abdomen contracted somewhat, and the pulse fell, but some ounces of pus continued daily to exude. At the end of six weeks she removed to another district, and died exhausted two months afterwards. The succeeding tenants have all had a lowered tone of health. One has had several abortions, and the children there have been reared with more than average difficulty, subject to all prevalent epidemics, especially scarlatina. This malady has carried off several children in another pair of cottages precisely similarly situated, two miles to the south of this; and the pale and sickly aspect of maternal parents, ruddy enough in other dwellings, distinctly indicated that some unwholesome influence was continuously at work on their systems. Half a mile east of the latter there were five houses very close to one of the largest dirt-hills, where I have seen young people who were but slightly strumous when they arrived, become subsequently affected with hip-joint disease, caries of the tarsus, phthisis, intractable sequelæ of scarlatina, and general marasmus. A little further on, a good-sized mining village, situated at the bottom of an acclivity rising to the south, where the dirt-hill was correspondingly extensive in scale, furnished for a long time the most varied and arduous practice, especially among the young: croup was frequent, and generally fatal. Dysenteric affections, severe and obstinate scarlatina and measles, carried off a much larger percentage than in any other part of the parish; while very few of the mothers presented the normal, buxom, well-fed aspect that usually contrasts so strongly with that of their male relatives who toil under ground. Some years ago the dirt-hill was removed, buried in the adjoining hollows, and soiled over. Since then the village referred to has become decidedly improved in a sanitary point of view—cases fewer and more amenable to treatment, because more sthenic in character. About a league hence, in another direction, there are two mining hamlets very close to each other, and both lying on the northern edge of an extensive tract of moss. The furthest cluster of houses is slightly above the moss level, the other 12 or 15 feet below it, but the latter has an open pit and a large dirt-hill towering over it to the south-west. The female inhabitants of the former are obviously superior as regards freshness of complexion and appearance of physical vigour, and, so far as I can learn, have no special ailments to complain of. The other collection of brick-built edifices has been little other than an hospital ever since it was erected, and those that throve well enough elsewhere became anæmic, listless, and dispirited there. In the males, in such localities, Decaisne's disease from time to time proclaims the cravings of nature for some such external consolation as can be inhaled from a tobacco-pipe; and the consumption of alcohol under such circumstances is not always squared by the rules of moderation.

With regard to the special nature of the gaseous emanations which are so evidently unfavourable to the health of those living in their vicinity, it is probable that sulphuretted hydrogen plays a conspicuous rôle; but others are also present. The same mineral elements and combinations indubitably exist in the upper surfaces of these chaotic heaps that gave rise to the more or less contaminated atmosphere of the workings below.[1]

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[1] Fresenius, Lehrbuch der Chemie, Erste abtheilung, § 64, bl. 97, says, "Der

Although there may be economical reasons to be urged for building habitations so near to such accumulations, and more especially the frequent convenience of the engine-keeper's abode being close to the pit, when the brushers are at work, so that during the night he may be easily signalled by the bell when the the cage is wanted to be raised; yet such considerations are, when rightly viewed, of little weight when compared with the couservancy of the only real capital of the workmen and their families—their health and strength. I am very certain that coal-masters in general only require the matter now discussed to be fairly brought under their notice to induce them to remedy arrangements so unwholesome and objectionable.

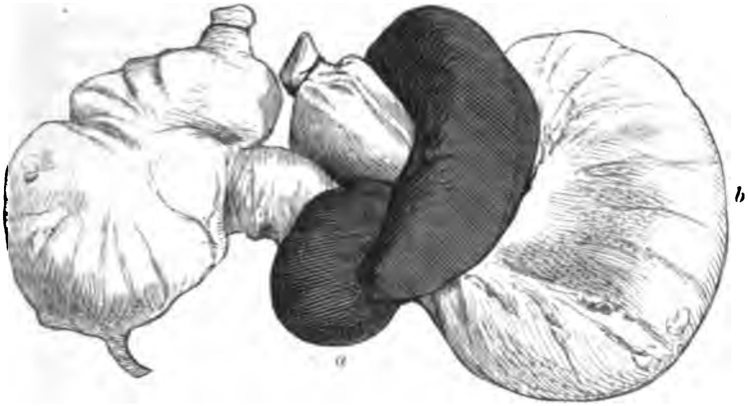
ARTICLE VI.—*Intestinal Obstruction from a Knot on the Lower Part of the Ileum.* By MICHAEL W. TAYLOR, M.D., Penrith.

(*Communicated to the Medico-Chirurgical Society of Edinburgh, 7th June.*)

THE cast which I send for exhibition to your Society affords an accurate representation of the pathological condition, appearances, and colouring of the parts, and was taken from the recent preparation, obtained at the autopsy eight hours after death, 1st December 1870. The result of the post-mortem may be described shortly as follows:—Body plump, fat; great distention of abdomen, and drum-like resonance. Peritoneum smooth, without inflammatory appearances or products. Small intestines distended, concealing from view all other organs; their parietes thin, without rupture, and not remarkably changed in colour until approaching the right iliac region, where a livid mass of strangulated bowel indicated the site of obstruction. About 2 inches above the cæcum, a portion of the ileum about 22 inches in length was found coiled and involved upon itself so as to form a running knot. It must have taken place in this wise: About 12 or 15 inches of the lowest part of the ileum must have become coiled in a circular loop; the portion of intestine directly above must have twined round from behind to the front of this coil; a knuckle, or rather elbow, of this portion of the bowel must then have slipped through the loop, and, becoming embraced by it, on the tightening of the noose, must have been caught in a slip-knot, or the same kind of knot as that by which sailors hang their necktie. On looking at the cast, the distal or cæcal end of the ileum may be seen to form the knot, and the intestine superior to it constitutes the included *cul de sac;* this included portion, *b*, is bulged out in a globose form, with a semilunar outline like a bag or pouch, measuring 5 inches by 3, and showing on its surface the markings of six or eight sacculi or folds. It is drawn

artige stinkende Luft enthält nicht allein einen vermehrten Gehalt an Kohlensäure, sondern auch Kohlenwasserstoff, Schwefelwasserstoff, und Phosphorwasserstoffgas, ferner kohlensaures Ammonium oxyd und Schwefelammonium. So verdörbene Luft findet sich ferner in Kohlenbergwerken, woselbst der Luft sich öfters Kohlenwasserstorff beimengt," u. s. w.

into puckers at the neck, and the little finger could be passed freely under the point of constriction there. The colour may be noticed to be heightened, but without lividity, and it was not immoderately distended. The point of greatest constriction was at the lowest part of the knotted portion, *a*, near the ileo-cæcal junction, where the involved intestine was in one part of a dark brick-dust or brown colour, and in another coil of a livid purple, and in parts black, soft, and gangrenous. Below the knot the distention and dark colour terminated abruptly; the cæcum and colon, white and collapsed; gall-bladder full, and stomach healthy; no disease elsewhere.



The illness existed fourteen days, and the subject was under observation during all that period. She was a strong, healthy, married woman, aged 40. Symptoms commenced suddenly with tormina, vomiting, pain on left side, constipated bowels. Fæcal vomiting on third day; absence of inflammatory symptoms throughout; no high tenderness nor distention until towards the termination; continuance of retchings, but subsidence of stercoraceous appearances, until their recurrence three days before death. Two or three times during the illness, passage of fluid fæces in small quantity, and the repeated voidance of flatus. Diagnosis, from exploratory injections, etc., was obstruction at a point above the cæcum.[1]

The disclosure of the pathological cause attaches to this case of ileus an interest and importance, as it affords a perfect example of an intestinal lesion of the extremest degree of rarity, viz., true knotting of the bowel. Amongst the various causes of intestinal obstruction seated in the bowel itself is volvulus. The cases referable to this head may be arranged in two subdivisions, viz.—(*a*) Twists or folds of the intestine on its own axis; (*b*) Twists around another piece of bowel, or knots. Volvulus, even strictly in its generic sense, as including both these two forms of entanglement, is a comparatively unfrequent cause of ileus; and species (*b*), or knotting of the bowel, I find to have been exceedingly rarely recorded. One instance is related by W. Gruber in 1863. One very similar to the present case is given by Duchaussoy in his elaborate résumé of 518 cases of intestinal obstruction, published in 1860. Dr Hilton Fagge has given records of 54 cases of ileus in which autopsies were made in Guy's Hospital for fifteen years,—in 7 instances, volvulus or twists were found, but in none of them knots. In the British medical periodical literature of the last half-century, cases arising from twisting of the bowel on its own axis are given by Abercrombie, Oudney, and one or two others, but I find no case of true knotting recorded.

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[1] A full account of the case may be found in the British Medical Journal, 29th July 1871.

In the present case, after gastrotomy, the disentanglement of the knot would have been quite feasible.

ARTICLE VII.—*The Normal Products of Hepatic Action.* By Dr JOHN G. MACVICAR, Moffat.

PART I.—GLYCOGENIC AND FATTY MATTERS.

THE hepatic action, according to a communication made in this Journal for August 1868, has for its principal function to prevent the reconstruction of vegetable along with animal matter out of the digested food in the portal blood when depositing tissue, and thus to preserve the newly-formed animal cells free from that incrustation of cellulose which exists in the new-born cell or primary utricle of the vegetable kingdom—an incrustation which, however valuable in that kingdom, imparting, as it does, durability to the plant-tissue or tree, would, if present in the animal kingdom, prevent that mobility and easy transformability of tissue which is essential to animal life. In a word, the view there given is to the effect that the hepatic function is emphatically that which maintains the difference between animal and vegetable substance—securing the continued reproduction of the former and the avoidance of the latter, under an otherwise inevitable morphological liability to lapse into it.

As a plant which has completed its growth, and is ripening its seeds, no longer continues to form cellulose, but disposes of the nutritive matter which continues still to flow into it, as sugar, oil, essence, resin, colouring matter, etc., in the same way, it is maintained in the communication referred to, the liver, like a fully-developed plant or tree (already crowded with succulent leaves), disposes of that part of the inflowing plastic matter which would otherwise have disposed of itself as cellulose, as sugar, oil, bile, etc., instead; whence it comes to pass that cellulose in the animal kingdom occurs normally only in such animals as are very low in the scale—

only indeed where it is needed to give support or permanence to their otherwise too soft bodies; or if in the higher animals, then only abnormally in states of disease (amylaceous degeneration), when the hepatic action is not performing its function successfully.

According to that theory of the method of creation, indeed, which now begins to be popular—namely, the secular development of new and more highly organized animal species out of more ancient and simple ones—the limitation of hepatic action may serve another important purpose in the economy of nature. It may serve to preserve from a more speedy ascent in the animal kingdom those species in which, through the failing of the hepatic action, phyto-cellulose is abundantly deposited. Thus, while the most advanced advocates of this theory are disposed to regard certain *larvæ* among the tunicata as the ancestors of the whole vertebrata, we might explain the permanence of the *mature forms* of ascidians in nature to this day by the abundance of their cellulose, which retards their transformation; and so of many other orders of the invertebrata. But it seems to me to be building without a foundation, when men of science speculate on such a subject, and are yet both ignorant, and content to remain ignorant, as to whether there be two atoms of hydrogen, or only one, in an element of aqueous matter; or three atoms of oxygen, or only two, in an element of silica.

The theory of hepatic action now advanced, if accepted, has the advantage of accounting for a hepatic function and apparatus to the extent that it is met with in the animal kingdom, which, down to the present, has still remained among the desiderata of physiology. And if it admit of verification, it is surely worthy of it at the hands of such physiologists as pursue that study in a rational, and not a merely empirical, way. It does indeed take for granted that the characteristic material of plant-tissue (which, to save continually repeated definitions, we may call phyto-cellulose) is of easier construction than animal-tissue (which, for a similar reason, we may call zoo-cellulose). It assumes that, given a quantity of living germinal matter, having such a history as that in the portal blood, especially if it have previously existed as vegetable matter, it will, during the epoch which follows that of digestion or analysis—the epoch, namely, of reconstruction or synthesis—tend to form into phyto-cellulose rather than into zoo-cellulose; or, at any rate, to give the former as an incrustation upon the latter unless it be prevented. Now the demonstration of this, it must be admitted, cannot be given here, any more than that of one of the later propositions in Euclid's Elements without those which go before it having been first given. It merely presents itself in its own place in the new science of Molecular Morphology, and is demonstrable only to the few who have made a study of that new science. At the same time, independently of such demonstration, and on general chemical grounds, it ought to commend itself to men of science, because it is generally known that phyto-cellulose requires as material for its construction only carbon and moisture, which abound everywhere; while zoo-cellulose not only requires these elements, but ammonia also, which is both a comparatively scarce substance in nature, and of such difficult construction out of its elements, that the chemist can scarcely accomplish it except in a roundabout way.

In the Molecular Morphology referred to, it comes out that the nucleus, or rather the axis of the least element of phyto-cellulose, is an atom of *common vapour*, fixed by three atoms of carbon placed symmetrically around it; while the corresponding part in the least element of zoo-cellulose is an atom of *ammoniacal vapour* fixed by six atoms of carbon.[1] But in these things, of course, I do not insist here. Nor is a belief in them necessary to our progress, nor to the acceptance of what follows.

It is proposed in this communication to verify the theory of the hepatic function which has been stated, by showing that the hepatic products are in the highest degree analogous in structure to the vegetable products which have been already referred to, and which substitute cellulose in the ripe fruit and the full-grown plant or tree.

A more general object also is to give the structures and formulæ of the normal hepatic products, so far as they can be determined at present independently of any theory, and that as the first step necessary towards a true knowledge of the hepatic pathology, which I leave to others and the future.

And here, since it adds so much to clearness and distinctness of conception, let us have recourse to diagrams representing our molecular structures, so far as the types already in the hands of printers and a single plane surface such as that of the page (instead of space in three dimensions) will allow, which is not far. And let us take the same symbols as were taken in this Journal (for March 1870) in a paper on Urea and Uric Acid, modifying that for ammoniacal vapour, however, which is a dimorphous element, isamorphous in one of its forms, with a couple of atoms of common vapour on the same axis, bolted together by an atom of hydrogen, which stands concealed in the axis between them. For—

Substances.	Symbols.	Their meaning.
Hydrogen, . .	ǀ	A dash (say a figure 1, the atomic weight of hydrogen on the common scale).
Active Oxygen, .	∞	A figure 8, usually in a horizontal position, the atomic weight of a single atom of oxygen, the atoms in the aeriform state always going in couples.
Oxgen gas, . .	∞ ∞	
Carbon, . . .	⬭	A cipher, usually in a horizontal position, its atomic weight = 6 when H = 1. Carbons also tend to go in couples, atomic weight = 12.
Coupled carbon, .	⬭ ⬭	

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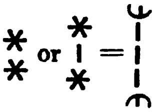
[1] See A Sketch of a Philosophy, Part III. The Chemistry of Natural Substances, Chap. ix. The Tissue Element. Williams & Norgate, 1870.

Substances.	Symbols.	Their meaning.
Zote, . .	or	Azote, a coupled atom, the single atom named zote not insulable by itself, and therefore not a laboratory substance, but intensely active.
Azote, . .		
Aqueous matter,	✱ =	A star of 6 rays, its literal symbol Aq, transformable into HO, and eminently dimorphous.
Ammonia,		Dimorphous, and giving, on decomposition, + III = Az H_3.

Glycogen, Dextrine, Sugars, Inosite, Glycerine, Glycocoll, etc.

And now as to those products of the hepatic action to which we shall first direct our attention, it is desirable to fix upon glycogenic or saccharine matter, and oil or fat. Not that those are the most characteristic products of the liver; but the former lies so completely at the basis of all vegetation, and indeed all organic chemistry, that the student cannot proceed with advantage in any direction if in ignorance of the structure of an element of saccharine matter; while with regard to oils and fats, they are so constantly associated with saccharine matter as its ultimate representatives when the latter has yielded up the most of its oxygen to the atmosphere again, that it is best to take the two in connexion.

Nor let it be thought that either is of small importance in the economy of nature. Molecular morphology shows that the most central part of the albumenoid or proteine molecule—that which (1) would remain if that molecule were to rot or dissolve away from the periphery inwards, and consequently that also which would (2) be required as a nucleus if an albumenoid or proteine molecule were going to be constructed, and that which (3) must remain in the blood and go out in the urine if the constructive power of the body be failing—is a group of atoms represented by the formula $C_{12}\,H_{12}\,O_{12}$, or, if dried in the laboratory, $C_{12}\,H_{10}\,O_{10}$, in short, a molecule, which, to use for it the most comprehensive term, we may call glycogen. As to fatty matter, again, it may be shown that, while it is of great value after undergoing digestion by the action of oxygen for constructing the carbo-hydrous part of the tissue element, it is precisely the material out of which the non-aqueous part of the neuro-cerebral apparatus is mainly constructed, being provided by nature (like other kinds of food) for this purpose, by the vegetable kingdom and the hepatic action. That it should be produced in greater quantities than are required for these purposes, and of kinds that cannot be utilized in this way, is only what is constantly occurring in the richness and variety of nature. Besides, are we to forget its use as fuel to be burned by the oxygen of the atmosphere, brought into contact with it by respiration, on which so much stress is laid in modern physiology? Beautiful, surely, that the excess, or what is not fit for the primary use, should be thus got clean out of the system; especially if, at the same time, by raising the temperature of the organization above that of the ambient atmosphere, it does more good than harm. But to advocate mere burning as the principal end for which existence has been awarded or permitted to this, or any order of concrete substances, is to advocate one of those views (so prevalent in modern science) which, in consequence of their want of comprehensiveness, have gone far to bring the grand and truly philosophical doctrine of final causes into disrepute.

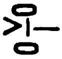
The types used as symbols, which have been already adduced, will serve our purpose generally. But so much in all organic chemistry, and especially in most of the substances which we have in prospect, turns upon the structure of hydrogen, that it is desirable—almost necessary, indeed—here to define the structure of this element more particularly.

Let us then, according to our views, (1) affirm that there is a unit of weight or element of material substance which is common to all the chemical elements or indecomposable substances, each chemical atom consisting of a group of these material units, their number in the atom being its true atomic weight; and (2) that hydrogen is that chemical element of which the constitutive number of material units is the smallest that can give a structure which possesses symmetry, stability, and individuality when moving about among others—that is, a structure which has an axis and an equator evenly balanced between its two poles. These conditions imply five material units as the material of construction; two to form poles or terminals of an axis; and three to define a plane or equator evenly balanced between these poles, for no number less than three can determine any plane. It may be added, however, that this group of five material elements or centres of force is rather the nucleus of the atom of hydrogen than the whole of it; for these five material units, while they exist near each other, balanced *in equilibrio* by their mutual attractions and repulsions, are invested and surrounded to an unknown extent by their five atmospheres of æther, now confluent into one which envelops them as merely its nucleus.

Of the nucleus of the atom of hydrogen, the following diagram may serve as a memorial:—

Pole.
•
Hydrogen. Equator. • • • Equator. Atomic weight = 5.
•
Pole.

Hence hydrogen may enter into union symmetrically with other elements, so as to give insulable and separable substances by receiving either (1) one atom on each pole, or (2) three atoms on its equator, or (3) both. And this much of its structure it was necessary to adduce in order to explain the ratios with which a single atom of hydrogen is found united in a multitude of substances which are the products of nature or the laboratory. Thus a very stable and generally diffused substance in nature is marsh gas, its formula ($C = 6$) being $C_2 H_4$; and a very interesting substance in the laboratory is chloroform, its formula $C_2 HCl_3$. Now interpreting both formulæ in the light of molecular philosophy, we see with the mind's eye a structure of which the axis in both is an atom of hydrogen carrying an atom of carbon on each pole; and on the three points, for union, on its equator carrying three atoms of hydrogen in the case of the marsh gas, and these substituted by three atoms of chlorine in the chloroform. The formula we may thus express in our symbols:—

Marsh gas, . . .  = $C_2 H_4$

But of these things hereafter. At first we have to do with still simpler combinations, even the simplest of all—that, namely, which results when an element of moisture and an atom of carbon enter into union with one another.

And here, unfortunately for us, we have to revert to a state of chemical theory which is no longer popular in this country. Thus, it used to be concluded from the experiments that, as all common vapour consists of one part by weight of hydrogen and eight of oxygen, and its specific gravity in the aeriform state was nine on the same scale, so the least particle of it should be represented by the literal formula HO, implying an atom of each element, the atomic weight of $H = 1$, and that of $O = 8$. More lately, however, it has been observed that oxygen does not move about freely, nor does it occupy the same volume as hydrogen in the aeriform state in weights of 8, but in portions weighing double this, that is 16. Hence it has been maintained of late that this latter number is the atomic weight of an atom of oxygen, and that the formula of the least particle of common vapour is—

$$H_2 O = 2HO.$$

For the same reason, it has been concluded that the weight of an atom of carbon is not 6 as it was long held to be, but 12. And this doubling of the two primary and all-important elements has necessitated the doubling and taking doubles for singles of a great many more. The fallacy took its rise in neglecting the law of symmetry, which usually requires that all such light elements shall go and come, enter and leave, molecules in couples. But just because it is a homage to the law of symmetry, these double-weighted atoms and their formulæ, when corrected, are often to be preferred to the older formulæ, since they give whole instead of half molecules.

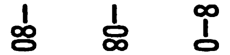
But to come into contact with molecular nature in her least particles, it is necessary to regard a single atom of oxygen as weighing 8, and a single atom of carbon as weighing 6, when a single atom of hydrogen weighs 1. Not but both oxygen and carbon tend to move and remain at rest in couples, the coupled units having therefore the atomic weights of 16 and of 12. But these elements are also found in action as single atoms; and thus we have, as the simplest and most elemental,

Hydrate of carbon, . . . CHO,

in which the letters are written in the order usual with chemists—an order which has no higher claims or pretensions than this, that when thus written the letters follow each other as in the alphabet!

But by adopting our symbols, we immediately obtain a somewhat clear and distinct conception of such a combination.

And first of all we see that, as it consists of three members, so it may possess one or other of three different structures and forms. And these keeping the aeriform elements always above the fixed element on the paper, we may thus represent CHO in diagrams, as also in corresponding letters; the diagrams being supposed to be read from the bottom upwards—

Hydrate of carbon,  Trimorphous.

COH OCH CHO

Further, we see that in none of its forms can this structure be symmetrical so as to possess two poles which are similar to each other, and an equator lying evenly between them. In virtue of the heat or other force, therefore, which actuates it in common with every material structure whatsoever—that is, the palpitation, rotation, etc. of it, either in parts or in whole, it cannot remain *in equilibrio* isolating itself in space, but must ever tend to move hither or thither until it has fallen in with other structures, and sufficiently symmetrized its action by union with them. More shortly, and without attempting to give here the mechanism by which chemical activity and affinity exist and act, it is enough to say here that being unsymmetrical, CHO is uninsulable. And such elements of hydrate of carbon, when constructed in the neighbourhood of each other, must tend to run together into groups or molecules. No substance, therefore, will be separable and cognisable in the laboratory whose formula is merely CHO. But everywhere that there is organic concretion or growth, especially among its first beginnings, we may obviously expect $C_n H_n O_n$, and ultimately $C_x H_y O_z$.

The question is as to the value of n. Now to this molecular morphology gives a definite answer. The form of the atom of carbon, as also that of oxygen (and, indeed of the elements generally), is pentagonal. That of hydrogen, as has been shown (also sulphur, selenium, and tellurium), is trigonal. Hence, when a group of atoms of hydrate of carbon aggregate around a common centre to form a symmetrical and insulable molecule, the number which must concur, and go to constitute the molecule, is determined. Thus, geometry shows that for pentagonal forms to concur symmetrically and completely in this way, precisely 12 are required, and the form resulting is one of the Platonic bodies, namely, the dodecahedron. For trigonal forms so to concur, on the other hand, 20 are required, and then there results another of the Platonic bodies—viz., the icosahedron. When, therefore, in a molecule of hydrate of carbon, the atom of C or of O is centrad, the multiple $n = 12$; when the atom of H is centrad, $n = 20$.

And here I may remark, in passing, that without any appeal to the special determinations of our molecular morphology, and simply on the hypotheses that the atoms of bodies overhead are spherical, and that those of the same kind are also of the same size, when placing them symmetrically around a common centre so that the group may be as symmetrical—that is, as spherical—as possible, the same numbers 12 and 20 are obtained!

But whether shall we adopt 12 or 20 as the number of atoms of CHO in our molecule? To this it is to be answered, that H is always so eager to be off, compared with O, and especially compared with C, that in all ordinary cases we must allow H a place on the periphery of molecule. We obtain, therefore, as our insulable

Molecule of hydrate of carbon, . . $C_{12} H_{12} O_{12}$.

Such then is the number of atoms in our smallest saccharine molecule, when that molecule is monometric, or most spherical and perfect in form; and when, consequently, its activity has most successfully accomplished its end; and when, therefore, its remaining activity is a minimum—more shortly, when it is most inactive or reposing. And such, it is well known, is the formula of that which has been called inactive or neutral sugar.

But in such cases the law of differentiation often comes into play; that law, namely, by which a structure is saved from explosion or solution, and is enabled to survive an ordeal as a concrete, by making some part of itself dissimilar to some other part. This law has hitherto indeed been recognised in physiology only, applied to the development and maintenence of organisms only. But in these it is only a particular display of the universal principle of dissimilarity in two or more parts or particles, as the condition of union, both initial and sustained. The embryo gains as a concrete upon the liquid in the midst of which it develops, and is enabled to survive the ordeal of the solvent power of that liquid by its own differentiation. And the same phenomenon comes into play everywhere as soon as there is chemical action and a molecule produced.

When it takes effect upon an isometrical molecule with 6 equal axes, and of this $C_{12}H_{12}O_{12}$ is a formula, it usually does so by giving eminence to some one axis of the six, either by addition or subtraction of the same matter from both extremities or poles. Now in this case, without disturbing the fixed nucleus of C_{12}, this may easily be done by the subtraction or addition of a particle of moisture on each pole. Hence, along with that which we have found already, we may expect two other sugars, all three being—

1. The isometrical molecule, . . $C_{12}H_{12}O_{12}$
2. Differentiated by subtraction, . $C_{12}H_{10}O_{10}$ *
3. Differentiated by addition, . $C_{12}H_{14}O_{14}$

Now such are the formulæ of the three most eminent saccharine substances.

It is well known, however, that the chemical method of investigation (weighing the substances when in combination with another substance whose weight is known, followed by destructive analysis) gives these three as the formulæ, not of three substances only, but more nearly of thirty. There is manifestly therefore some secret about the molecules, which these formulæ stand for, which experimental chemistry cannot explain. The same formula manifestly stands for many molecules differing notably from each other, both in their physical and chemical properties.

Well, then, let us see whether molecular morphology does not unfold this secret in a perfectly satisfactory manner, and bring us into acquaintance with the forms and structures of the molecules, which the chemical formulæ do indeed affirm, yet leave in concealment.

It has been shown that the simple saccharine element, CHO, is trimorphous. Suppose, then, these trimorphous elements to be aggregated together in a group of 12, with nothing to limit their permutations but the law of symmetry, acting in company with the law of differentiation, which demands a play and a variation of form between the polar and the equatorial parts of the molecule—how many dissimilarly constructed molecules, possessing dissimilar properties, may we not have, all of which the same formula $C_{12}H_{12}O_{12}$ will equally cover? Whatever that number may be, a still greater number will $C_{12}H_{14}O_{14}$ cover; and even $C_{12}H_{10}O_{10}$, in which the poles are fixed, naked, and invariable, may cover three.

Something of the variety and richness of nature, at all events in this respect, as in all others, the following diagrams may assist in explaining. They are as it were profiles of the dodecahedral molecule, or more shortly the dodecatom, composed of CHO, and show half the number of elements of which it consists.

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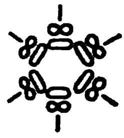
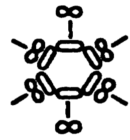
* How the formula of cane-sugar comes to be $C_{12}H_{11}O_{11}$, I have elsewhere shown. See A Sketch of a Philosphy, part ii. p. 72: Williams & Norgate.

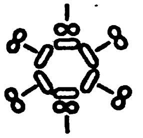
Inactive Sugars, etc.



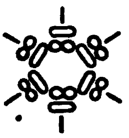
1.



2.



3.



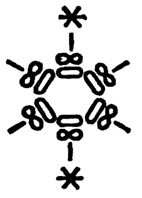
4.

$C_{12}\ H_{12}\ O_{12}$

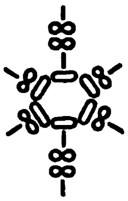
There are several others also. Moreover, except the first, all are differentiated in structure, though continuing isometrical in form! They will all therefore be more or less stable in the regions of nature in which they are produced, as also in the laboratory of the chemist. And thus they may possibly be detected and described by him. If the series had been continued, No. 5 would have resembled No. 3, only that the position of C and O in the poles would be inverted; and so on.

The molecule which is differentiated by the addition of an atom of moisture on each pole will give the same series increased by several additional members, as for instance the following, in which the body of the molecule remains the same in all.

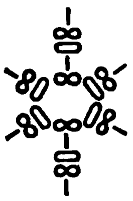
Fruit Sugars, etc.



1.



2.



3.

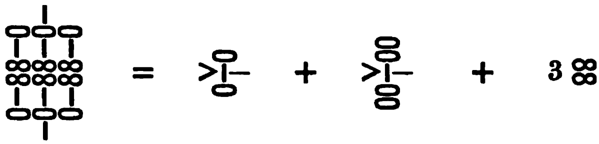
$C_{12}\ H_{14}\ O_{14}$

In No. 1 the molecule carries an atom of aq. (common vapour) attached to each pole. In No. 2 that atom of aq. is transformed into HO (the acid or basic state of moisture, according as the atom of H or of O is terminal of the axis of the molecule and presents itself for union). The aqueous matter in the pole of No. 2 is therefore, according to the fashionable notation, H_2O; and if that aqueous matter went off, or were drawn off, there would remain a molecule with the very frequently recurring formula $C_{12}\ H_{10}\ O_{10}$. In No. 3 each pole is a saccharine, viz., CHO. But here, as in No. 4 of the first group of diagrams, there is a liability of an atom of C on each pole to go off with H or HO, and so to reduce the carbon in the nucleus to C_{10}, and to give a start to a new series of substances.

But not yet to part with syrupy and saccharine substances, it may be shown that when saccharine elements of CHO are set loose along with nascent hydrogen, three of the former are apt to attach themselves to the three regions for union on the equator of the atom of hydrogen. Moreover, the combination thus constructed (each being very oblate in form) must tend to couple and go off in couples, as atoms of oxygen and of carbon, etc., which are also oblate, tend to do. Such a structure it is unfortunately difficult to represent on the plane of the paper as we have done the others. Perhaps some idea of its most symmetrical structure might be given by supposing the axis to be horizontal, and writing the formula thus:—

$$\text{Glycerine} = \quad H \begin{cases}(CHOOHC)^3\\(CHOOHC)_3\end{cases} H \quad = C_6\ H_8\ O_6$$

Giving all its constituent elements reduced to the same plane, and in the state in which the axes of all are parallel, we obtain— .



Glycerine, = Marsh gas + Olefiant gas + Oxygen gas,

a very interesting structure, full of the promise of resolving itself more readily than sugars in general into oxygen gas (which is in fact already constructed within it) and olefiant matter, and light hydro-carbon, thus:—

1. Marsh gas, . .	C_2	H_4	
2. Olefiant gas, . .	C_4	H_4	
3. Oxygen gas, . .			O_6
Glycerine, . .	C_6	H_8	O_6

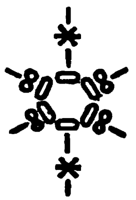
But such a structure is still far from having attained one of stability and repose. Each atom of it may be said to be a case packed full of oxygen gas, hydrogen, and hydro-carbon, needing only a change of form and a further supply of oxygen to go wholly off into the aeriform state with explosion.

But, in aiming, as every molecule structure does, at a greater degree of symmetry or sphericity, and therefore of stability or repose, such structures may, and generally do, double. And what do we now obtain? Plainly a completed syrup molecule resembling most closely that of fruit-sugar, but with this difference, that the terminal atoms of moisture are not now free to go off on the application of heat. They have now an atom of H half-occluded in each pole, which also belonged to the molecule during its genesis, and which, therefore, will be difficult to be expelled. Hence, for the entire molecule a remarkable degree of stability.

If, in fact, the polar form in this syrup — that is, an atom of vapour with an atom of hydrogen in each pole—could possibly be obtained free from carbon (which is the sedative principle among organics), the medicinal value of this H_2aq as a harmless stimulant would probaby be immense. And it does not seem impossible to obtain water aerated in this way to a certain extent.

At any rate, by the doubling of the chemical formula of glycerine, we obtain

The Sweet Principle of Oil.



$$C_{12} H_{16} O_{12} = 2 (C_6 H_8 O_6)$$

We shall presently see how this beautiful molecule comes to be constructed during the elimination of oxygen from hydrate of carbon in the production of fats and oils. But yet one remark more on sugars.

In somewhat analogous circumstances, but in this case during the elimination, not of oxygen, but of nitrogen, another kind of saccharine matter shows itself, which, viewed in its chemical formula, indeed it seems strange that it should have anything to do with the sugars. That formula is $C_4 H_5 NO_4$, its name glycocoll or glycocine. But though this formula, as also its double, give symmetrical structures, either or both of which may exist in given conditions of existence, yet the culmination molecule must, as in other cases, be a dodecatom, and if we construct this molecule we obtain the following very interesting result:—

Sugar of Gelatine.

Polar matter, urea, . .	$C_2 H_4 N_2 O_2$
Equatorial matter, sugar, .	$C_{12} H_{12} O_{12}$
Polar matter, urea, . .	$C_2 H_4 N_2 O_2$
	$4(C_4 H_5 N O_4$

The diagram is very beautiful, but I grudge to tax the patience of the printer more than is indispensable for illustrating our principal substances.

Glycocoll, then, is an atom of inactive sugar differentiated by one of urea fixed on each pole!

And here we may remark, that this process of differentiating the poles of a dodecatom, provided it be by additions on them of the same elements as constitute the body of the molecule, must soon lead to the construction of dodecatoms with double walls. Thus, when the axis by successive differentiation has become too long for the equatorial part or the body, and when the latter has expanded itself to the utmost, then the latter will also receive on itself such matter as had previously attached itself to the poles merely; hence, after the first isometrical molecule $C_{12} H_{12} O_{12}$, we shall have

Double-walled sugar, etc., . $C_{24} H_{24} O_{24}$;

and, differentiating the poles by the omission of an atom of moisture from each, $C_{24} H_{22} O_{22}$. This double-walled molecule may also result from unification in the ordinary course of natural molecular synthesis.

$$2(C_{12} H_{12} O_{12}) = C_{24} H_{24} O_{24},$$

also the initial member may be $(CHO)_2$. And after that $(CHO)^3$, giving as its molecule

$$C_{36} H_{36} O_{36},$$

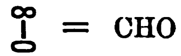
to which we shall soon see peculiar eminence attaches.

But from such molecules all the oxygen soon succeeds in escaping, except a single or double atom on each pole, to differentiate the molecule and protect it from the attacks of the mundane oxygen crowding around. Hence the series of fatty acids and bases.

And here let us bring this paragraph on glycogenic forms and sugars to a close. Though all that our method discovers at sight, as it has now been brought before the student, is as mere nothing, compared with what remains to be discovered by the same method when developed by applied experiment, yet I do not see how it can be denied that our method casts a very pleasing and satisfactory light upon much that has hitherto been altogether dark and strange, and transfers much from the region of the merely empirical to the realm of the rational. No doubt, there are many at the present time who affirm that an experimental result is the last word for philosophy; but that is the same thing as to affirm, that with regard to all that has hitherto been meant by the term philosophy, there is no such thing at all.

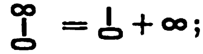
Fats and Oils.

In what has preceded the various possible forms of the saccharine element, CHO have been placed in a certain order, whereof



$$\overset{\infty}{\underset{0}{\mathrm{I}}} = CHO$$

is given as the ultimate form, or that towards which the various transformations tend, and in which they come to a close. It follows from the principles of our molecular morphology (and here merely experimental science will not refuse to go along with us), that in this combination all the affinities are most fully satisfied. Let it not be concealed, however, that here our new science finds in chemistry the application of a principle which has hitherto been recognised only in physiology, namely, the tendency of a structure (when under construction or change) to redintegrate an antecedent or primal form, that is, heredism. The genesis of carbon, according to the data of our molecular morphology, is always accompanied by the genesis of attached hydrogen at the same time. A molecular structure which was previously a unity undergoes segmentation or partitionment into an element of hydro-carbon. Hence, under the law of heredism, when at first in any combination, such as COH, an atom of hydrogen exists separate from one of carbon, these two tend mutually to come together. For the same reason, hydrogen and oxygen, though at first separate in a combination, tend to come together, so as to redintegrate primeval HO or vapour. Thus, we obtain the series that has been given in the diagrams on page 137, of which the issue, where the oxygen regains the aeriform state, is



$$CHO = CH + O$$

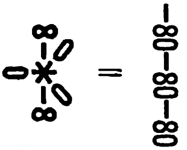
that is, the saccharine element is resolved into an element of oil and of oxygen. And hence the prevalent idea in chemistry is, that oily particles are nothing more than saccharine particles from which the oxygen has been mostly eliminated. And in accounting for fats and oils, it is usually not thought necessary to go farther back than to sugars.

Our molecular morphology leads us to suspect, however, that at least the more highly organized fats and oils—those with which we have to do in treating of the products of hepatic action, and those in the most perfectly organized animals generally—have a genetic history that goes beyond saccharine matter; that, though saccharine matter may be their immediately antecedent state, yet that saccharine matter is not a product of primary synthesis, generated directly by the union of carbon with moisture, giving CHO as the first element, but is a product of a transformation of matter, which has already either formed into the phyto-cellulose element or is tending to do so. And hence there is no permanent ground for surprise that, to all appearance, mere cellulose should be found to be fattening food for cattle and other animals who can digest it, or that oily and fatty matter should exist permanently in the liver. Nor is the existence of oil or fat there to be looked upon as disease, except in so far as it is produced in greater quantities than are eliminated by respiration or otherwise.

Moreover, this view of the chemical history of fats and oils, though doubtless it is a complication, ought not to be unacceptable to the experimental chemist; for it must be confessed that the popular theory, which regards these substances as having their origin in sugars merely as their first commencements, does not carry itself well through, nor go any way at all to explain the modes and regions of their occurrence.

The theory here advanced presents itself as a positive answer to the question, What is the transformation which an element of cellulose, or the equivalent material which is tending to form cellulose, is destined to undergo when the conditions of existence are such as to forbid the construction of cellulose, and these materials fall into the mode of union which is proper to the circumstances? To answer this question, let us now proceed.

Unhappily, an element of nascent cellulose is difficult to represent in diagram. Its axis has for its middle part an atom of aq which is hexagonal, and in each pole of this atom there is inserted an atom of HO. The atom of aq is central, and around it, as an equatorial expansion on each alternate side, there is an atom of carbon attached by its edge, fixing the whole. Now, say that by any means these three atoms of carbon are forbidden to gain this truly vitalized position, or that they are obliged to leave this position, then forthwith the whole must resolve itself into three saccharine elements—

A minim of cellulose  A triplet of saccharines.

Such triplets, however, will not exist single as here represented. Their length of axis, which is so great compared with their equatorial diameter, must hurry them, under the law of symmetry, which is also a law of sphericity, into positions around a common centre, to the end that their long axes may become equal radii, and thus offend no more against the law of sphericity. Now, one pole is hydrogen, and therefore trigonal; the other is carbon, and therefore pentagonal. Hence, if they aggregate around the carbon pole, which must give the most stable molecule, they must form dodecatoms; if around the hydrogen pole, they must give icosatoms. Supposing, then, that either in the course of nature or art, all the oxygen has succeeded in escaping, we obtain from the least element of cellulose the two most notable hydro-carbons, being the molecular states of $(CH)^3$—viz.,

The stearic, $C_{36} H_{36} = (C_3 H_3)^{12}$,
The melissic, $C_{60} H_{60} = (C_3 H_3)^{20}$,

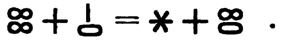
the former being that which is obtained from the fats and oils of the more perfect animals, while the latter is the chemical formula of the most composite of the hydro-carbons—that which is obtained from bees'-wax. It is not to be forgotten, however, that a dodecatom, consisting of $(CH)^5$ as the constituent member, gives $C_{60} H_{60}$, as well as an icosatom of which $(CH)^3$ is the constituent member. And we shall afterwards find that there is good ground for expecting $(CH)^5$ in nature as well as $(CH)^3$.

There is another reason also for the eminence of $C_{36}H_{36}$ in nature. Thus, the least particle of water, when given in terms of HO, is $H_{36}O_{36}$; add C, and let O go off, and there is given the stearic, etc., hydro-carbon. Nor is it to be forgotten that structures which, as members of molecules, can give icosatoms, can also, under a more loose development, give also tetratoms, which, in their turn, may compose themselves into icosatoms, giving a very tenderly constituted molecule, into which there enter no fewer than 240 atoms of hydro-carbon, distributed in sets of 12, too ready to degenerate into simple dodecatoms; so that, looking to such a structure as that of the brain, we may possibly find as the

Neuro-cerebral hydro-carbon,... $C_{240} H_{240} = 20(C_{12} H_{12})$ ... Softened.

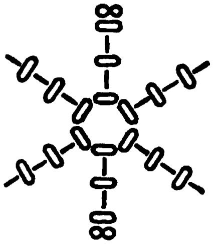
Now Liebrich found as the formula of his brain-stuff, $C_{232} H_{240}$. But all this is so purely conjectural, that we need not dwell upon it.

Not so problematical, however, is the structure of the molecule of the most perfect kinds of fat and oil. Not so easily broken down and softened must be the dodecatom in which the atoms of carbon are centrad, and of which the formula is $C_{36} H_{36}$. Suppose, indeed, that it exists free; then in this terraqueous globe, in which oxygen gas penetrates everywhere, an element of oxygen gas will no doubt soon attach itself on the extremities of one of its axes; and in this way it will be differentiated and its stability increased. The course of nature will be this: An element of oxygen gas—that is, two atoms—will attack the atoms of CH, which terminate one of the axes of the dodecatom $C_{36} H_{36}$. The terminal atoms of H, along with the single atom of O incident upon them, will then lapse into aqueous matter, which will go off when heat is applied, and there will remain on each pole an atom of carbonic oxide—



and we have the natural

Stearic or Oleic substance.



$C_{36} \; H_{34} \; O_2$.

But where such molecules are generated by the reduction of saccharine elements, we can only expect that on each pole of such a molecule there will be a saccharine, giving

$$CHO + C_{36} H_{34} O_2 + CHO = C_{38} H_{36} O_4.$$

Now we have already seen that atoms of CHO in hydro-carbon or fatty regions tend to form into atoms of glycerine, of which the ultimate or true syrupy form is $C_{12} H_{16} O_{12}$. The single dodecatoms of $C_{36} H_{34} O_2$, in like manner, will tend to form into composite dodecatoms of $(C_{36}H_{34}O_2)^{12}$. Thus ultimately there will result a beautiful and finely differentiated structure, its body consisting of oil, its poles, of a sweet principle. We thus obtain

Stearine.

$$C_{12}H_{16}O_{12}\ (C_{36}H_{34}O_2)^{12}\ C_{12}H_{16}O_{12} = C_{456}H_{440}O_{48} \div C_{38}H_{36.6}O_4.$$

Now, this when drawn and quartered according to the usual practice of chemists, so as to reduce the glycerine to a single atom, its formula supposed to be $C_6H_8O_6$—that is, dividing it by 4—gives $C_6H_8O_6 + 3\ (C_{36}H_{34}O_2)$, the tri-stearine of chemistry! Not but that a tri-stearine may be one of the states of the true stearine when nascent, or when undergoing destruction in the laboratory—for it is a symmetrical structure of much power. But, according to morphology, we must look upon the composite dodecatom with differentiated poles as one of those culmination forms towards which nature is ever tending, and which she generally succeeds in constructing.

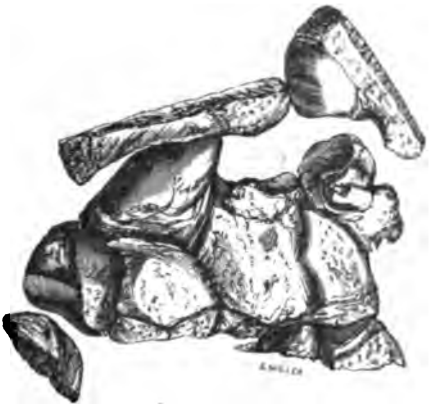
The chemical custom of cutting down every formula till one of its constituents is reduced to unity, is utterly out of keeping with the entire procedure of nature. Why should all molecules be made to stand upon one leg, when the visible creatures formed of them have never less than two at least?

ARTICLE VIII.—*On some Cases illustrating the Results of Excision of the Wrist for Caries, the Treatment of Deformity from Contracted Cicatrix, and Antiseptic Dressing under circumstances of difficulty, including Amputation at the Hip-Joint.* By JOSEPH LISTER, F.R.S., Professor of Clinical Surgery in the University of Edinburgh.

AT a meeting of the Medico-Chirurgical Society of Edinburgh on the 6th June, a communication was made by Mr Lister to the following effect:—

Mr President,—I have to exhibit this evening, in the first place, a case illustrating *the results of excision of the wrist for caries*, performed according to the principle and method described by myself in the *Lancet* several years ago; the principle being the removal of the entire articular apparatus of the wrist, including all the carpal bones, together with the articular extremities of the radius and ulna and five metacarpals, so as to place this excision in the same favourable position as that of the elbow, while the method (fully described in the *Lancet*) permits free access to the affected bones with the least possible injury to the tendons. The young man now before you is Case 5 of those described in the *Lancet* (25th March 1865), and I may quote shortly from the account there given. "Thomas Morris, aged twenty-one, a miner, was admitted on the 8th of July 1864.

About six months before, when suffering from smallpox, he was seized with inflammation in the right tibia and the left carpus, resulting in necrosis of the former, and caries of the latter. When he came into the hospital, the back of the wrist was swollen, and presented two sinuses, through which a probe could be passed down to the diseased bone. The hand was extremely feeble, and drooped when the arm was extended horizontally. It was very painful, interfering seriously with his night's rest, and his general health was otherwise much deranged, his pulse being 135, and his appetite impaired, while he was constantly bathed in perspiration." On the 16th of July, I removed the parts represented in a sketch given in the *Lancet*, as you will see from the copy I have brought with me. (The sketch is reproduced below.)



You observe, it includes the entire articular apparatus of the wrist. "A carious cavity occupied the place of the semilunar bone, and the adjacent part of the cuneiform was excavated. The other carpal bones, except the trapezium, were anchylosed into one mass." Nearly seven years having elapsed since the operation, we are in a good position for judging of its results. You observe that the hand has, on the whole, a very natural appearance, but that it presents at the dorsal aspect a transverse prominence, caused by the growth of new bone from the divided end of the radius, which seems to have become expanded into a socket for the reception of the ends of the metacarpal bones which have been rounded off by ossific deposit. Thus, a new joint has been constructed, of a form which, I may remark, I have seen in another case after the same operation. The formation of new bone has not taken place to the same extent from the ulna, and the hand has in an exaggerated degree the droop to the ulnar side which it assumes in the normal condition of the limb in a state of repose. Nevertheless, eversion and inversion of the hand can be carried through as great an angle as usual, proving that the tendons of the flexors and extensors of the wrist, necessarily divided in the operation, have formed secure new attachments. Flexion and extension of the wrist, and pronation and supination, are, you see, freely performed, and every joint of every digit has its normal movement, those of the knuckles only being not quite so free as in the other hand. You remark the perfect freedom of the actions of the second joint of the thumb, the extensor secundi internodii policis having been left intact by placing the radial incision in the angle between it and the indicator, where the cicatrix is still seen. The hand has a powerful grasp, as any of you may be satisfied by shaking hands with him. [The patient, before thus exhibiting his powers to the members of the Society, made a statement to the effect that he was engaged in charge of a steam-engine, and found his left hand equal to the right for all sorts of work, including wheeling a heavy barrow, and various other actions of a laborious and complicated character.] This case, Mr President, is certainly very gratifying, as an example of what may be done in the way of saving a hand from amputation by means of excision; but it is still more gratifying to be able to avoid excision by early free incision, practised antiseptically, before sinuses have formed, and followed up by antiseptic dressing. Five cases of this kind in the adult have occurred in my practice in the course of the last year, and useful as is the hand which you have just seen, it is of course not equal to the perfectly natural condition that may be retained by antiseptic management.

The next case I have to show illustrates what I believe will be found a valuable method of treatment for certain cases of—

Deformity from contracted cicatrix.—This young woman fell into the fire when an infant, burning the left side of the body to a frightful extent, the scar being seen to reach from the upper part of the neck to the lower part of the forearm, and laterally from near the spine to the mamma, the mammilla having been destroyed. The healing of the huge granulating sore, and the subsequent shrinking of the cicatricial tissue, led to the formation of a web of several inches in length, constituting an extension of the posterior fold of the axilla downwards, and binding the arm pretty closely to the side. We all know how unsatisfactory the treatment of such cases commonly is. The web, if divided with the knife, becomes reproduced by the coalescence and contraction of the granulations, and the condition of the patient is too often little, if at all, better than it was originally. In the present instance the tendency to coalescence of the granulations has been counteracted by a method which I employed first several years ago in a case of webbed fingers, viz., bringing the elastic traction of india-rubber to bear upon the angle of the wound made by cutting through the web. At the same time this plan of treatment has been greatly assisted, both in the earlier and later stages of the case, by antiseptic management. The irritation of the cut surface by putrefaction being avoided during the first few days after the operation, inflammation was entirely prevented, and thus we were able, even from the first, to use a degree of freedom with the limb, in raising it from the side, which would have been otherwise intolerable. It happens that I have now under my care in the Infirmary another similar case, operated on only two days ago, when a web of great length, and involving the whole breadth of the axilla, was freely divided; and my friend Dr Holmer of Copenhagen, who is here to-night, and who saw the patient dressed this morning, can bear me out when I say that the skin around the very extensive raw surface was perfectly free from redness or tenderness; while the young man was able to get up and move about almost as if nothing had been done to him. The advantages of antiseptic treatment have been equally great in the further progress of the case before you, for when sores are efficiently protected both from the irritation of putrefaction and from that of the antiseptic, they heal under circumstances inconsistent with cicatrization under water-dressing; and the mechanical irritation involved in the varied traction to which the sore has been here exposed, would probably have prevented healing altogether had the ordinary application been made. I have thought it best to exhibit the patient before healing is complete, in order that you may see the treatment in progress; and as the mode of dressing presents several features of interest, I will venture to trespass upon your time by performing it before you. The retaining bandage being now removed you see the rod of india-rubber [a rod of vulcanized india-rubber about as thick as the little finger] which exerts its traction upon the angle of the wound in the axilla. Its ends are attached to pieces of bandage which are tied in a half-knot over the top of the shoulder and then secured to the ends of a padded handkerchief passing under the other armpit, the shoulder being protected from the pressure of the knots by a shield of thick gutta-percha moulded to it. It is three days since the dressing was last changed; yet it remains perfectly free from putrefactive smell, implying that the antiseptic gauze, which is the essential material of the dressing,[1] has answered its purpose well; and the axilla is a situation that illustrates the perfect manner in which it adapts itself to any irregularities of surface. Between the gauze and the healing sore is interposed the oiled-silk "protective," to exclude the irritating influence of the antiseptic; and, in this particular case, the value of the protective is especially marked. For, if it were omitted, not only would the progress of cicatrization be arrested, but, as we have found by experience, the newly-formed cicatrix being weak from the traction to which it is subjected by the old scar around, becomes excoriated under the influence of the carbolic acid furnished by the gauze. Under the protective, on the other hand, healing proceeds securely and uninterruptedly.

In the earlier stages of the case the protective rendered further service, because, being applied next to the raw surface, it prevented the possibility of the granulations coalescing below the caoutchouc band, and enclosing it in a tube of granulation structure.

You observe how efficacious the india-rubber band has proved. According to the tightness with which it is tied up, the pressure which it exerts upon the angle of the wound can be precisely regulated, so as to cause continuous ulceration, if desirable; and thus, so far from the angle of the wound becoming filled up by granulations, the original incision has been, as it were, extended by the ulcerating process considerably beyond its original limits, yet without any pain to the patient; and you can observe the fibres of the pectoralis major and latissimus dorsi lying bare in the groove which the caoutchouc rod occupied. Meanwhile cicatrization has advanced both on the chest and on the arm almost up to the margins of the groove. The india-rubber rod, as soon as it is removed, is well washed with watery solution of carbolic acid; and, as caoutchouc imbibes the acid, it becomes itself antiseptic for the time being. The sore having been also washed with the lotion [a solution of one part of the acid in two hundred parts of water is sufficiently strong for the purpose], I now apply a piece of protective dipped in the same liquid, and outside this the rod of india-rubber, and then a piece of well overlapping antiseptic gauze, bandaged securely both to the arm and to the chest.

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[1] This gauze contains carbolic acid stored in insoluble resin among the fibres, with the addition of paraffin to avoid undue adhesiveness, in the proportions of one part of carbolic acid, five parts of resin, and seven parts of paraffin. It is manufactured by Macfarlan & Co., North Bridge, Edinburgh.

The gutta-percha shield for the top of the shoulder is padded with the gauze; and this illustrates another valuable use of that material. Supposing that the padding were of an ordinary kind, such as cotton-wool, putrefaction could hardly fail to take place in the sore. For the edge of the protective comes up to the immediate vicinity of the shield, and the discharge escaping from beneath it would soak into the padding and putrefy there, and the fermentation would be communicated to the fluid beneath the protective; since this layer, while it protects the sore from the irritation of the antiseptic, necessarily involves liability of any organic material that lies beneath it to putrefaction on access of the ferment. But by having the padding of the shield itself antiseptic this difficulty is overcome, the gauze of the axilla and that of the shield coming in contact with each other; and we have not had putrefaction occur on any single occasion since the operation. The advantages of this material are still further exemplified in this case by its use in the form of bandage, every turn of which, instead of affording a nidus for putrefaction, increases the antiseptic efficacy of the whole dressing.

It yet remains to show you what the patient can do in the way of raising the arm. At the time of the operation I did not get it quite up to the horizontal level. In the course of a few days it could be brought up to that level. Then her ambition came to be to reach up with her finger-tips to the handle of a small cupboard in the ward, fixed at some distance above the floor. Afterwards, stretching a little higher day by day, she was at length able to reach to the top of the cupboard, about nine inches higher; and now, within the last few days, by means of this species of gymnastic exercise, she has succeeded in getting her knuckles even higher than the top; and you see at present that she can raise both hands well above the head, and touch nearly as high a point on the wall with the one as with the other. Thus, instead of the usual course after such operations—namely, the web gradually forming again, and what was gained at the operation being ultimately lost—we have here made constant progress in advance of what the operation effected, and all this without the use of any means of extension, or any restraint upon the natural actions and usefulness of the limb. There can therefore, I conceive, be no doubt that, by persevering a little longer with the same system, we shall attain all that can be desired.

The next case I have to bring before you is an instance of recovery after *primary amputation at the hip-joint*, a thing by no means of common occurrence. The injury that necessitated the operation in the boy now before you (five years of age) was of extreme gravity. The little fellow had been endeavouring to climb up into a luggage-truck, when his right leg became entangled in one of the wheels, and frightfully mangled. The hamstrings and popliteal vessels were torn through, the knee-joint opened posteriorly, the femur fractured in the wound, and the soft parts of the thigh contused to so high a level, that I was obliged, as you observe, to make the anterior flap shorter than usual, and eke it out by extending the posterior flap; and, in spite of this, a small portion of the anterior flap lost its vitality from being implicated in the contusion. Now, there can be no doubt that, under such circumstances, the avoidance of putrefaction in the large wound was a most important condition of his recovery. Considering the state he was in, I believe that, if we had not succeeded in this respect, he would not have been alive before us this evening; and my reason for bringing him here is, that he affords another striking illustration of the advantages of our present mode of antiseptic dressing.

Of all incised wounds, those resulting from amputation have been the most difficult to manage antiseptically; and of all stumps, that at the hip-joint is the worst to deal with. When a stump has considerable length, we have for some time past managed quite satisfactorily by having it enveloped in about eight layers of the gauze, a piece of impermeable tissue, such as thin Mackintosh cloth,[1] being placed beneath the outer layer to compel the discharge to travel throughout the extent of the antiseptic tube formed by the dressing, before reaching the external air. The essential condition of free overlapping of the surrounding skin is thus complied with, while the use of a spray of carbolic acid lotion avoids any chance of the entrance of septic mischief during the changing of the dressing. But in a case like this, such an arrangement is of course impossible; and we had two special difficulties to contend with. One was the vicinity of the inner angle of the wound to sources of putrefaction in the perineum. This was overcome partly by stitching up the wound very closely at the inner side, and having the "drain" (of lint soaked with carbolized oil) projecting towards the outer aspect, so that discharge might be as small as possible towards the perineum. At the same time, the gauze, from its absorbent as well as antiseptic property, was of the utmost value, and, being folded of double thickness at the perineal side, answered the purpose completely; while in this case, as in the last you saw, the antiseptic quality of the bandage was of peculiar value, every turn round the perineum adding to the antiseptic security. And I may notice here another incidental advantage of this bandage, namely, that the slight adhesiveness which it possesses makes it cling to the part to which it is applied, and prevents the turns from slipping, as those of a calico bandage are so apt to do. I should add that, during the changing of the dressings, two of Richardson's spray-producers, worked simultaneously by two dressers so that each commanded half of the large wound, proved adequate to the purpose.

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[1] This tissue is known by the caoutchouc manufacturers under the name of "hat-lining."

The other great difficulty was the vicinity of the wound to the bed. Had the discharges been permitted to soak into the bedding, they would have soon putrefied there after losing the volatile antiseptic; and the products of putrefaction, soaking back into the dressing, would in all probability have neutralized its antiseptic virtue, and the fermentation would have penetrated to the wound. This danger was averted in the simple way you see here illustrated, —by having the gluteal region repose on a layer of folded gauze lying on a piece of Mackintosh cloth. In this manner the bed in which he lay was rendered itself antiseptic at the part with which the wound was concerned, and putrefaction was avoided from first to last.

While speaking of the advantages of the gauze, there is one other to which I cannot forbear alluding. If you apply this mass of it, consisting of thirty-two layers, closely to the face, you find you can breathe freely through it, as through a respirator. Hence, Sir, one great advantage of this dressing will be, that it will deprive those who discuss the antiseptic treatment of all excuse for speaking of it as operating by "excluding the air." We do not exclude the gases of the atmosphere at all, but adopt efficient means to destroy the energy of its floating ferments.

Part Second.

REVIEWS.

Selected Obstetrical and Gynæcological Works of Sir James Y. Simpson, Bart. Edited by J. Watt Black, M.D., etc. Edinburgh: Adam and Charles Black: 1871.

The late Professor of Midwifery in the University of Edinburgh was so widely celebrated, so well known, and exerted so potent an influence on the medical science and practice of his day, that it was an evident necessity that his works should be republished. Simpson was during his lifetime constantly in the press, hurrying with unwearied energy one pamphlet or journalistic article after another into the world, so that the *disjecta membra* have to be collected. This work he himself partially effected, in the two handsome volumes edited by Drs Priestley and Storer, and published in 1856 by the excellent firm of Messrs Adam and Charles Black. These volumes are now out of print, and they did not contain all that his literary executors now consider it expedient to republish. These literary executors (and especially their chosen agent, in regard to the volume now before us, Dr Watt Black) have had a task of no slight onerousness and responsibility to perform, for they undertake to present to future medical men an eminent physician, whom they esteemed in the highest, we might almost say, the most exaggerated manner; and, besides doing the late Professor justice, they have the laudable desire to justify to all time coming their own opinions of his exceeding greatness. They have placed an ingenuous young obstetrician in the front, not only as leading off with this first-published portly volume, but as having the most important part of the task to perform. No doubt Simpson's discovery of chloroform will always form an excellent "handle" to his name; it forms his claim to popular renown; but apart from this, Simpson's reputation demands something broader for its justification. It is as Professor of Midwifery in the University of Edinburgh that he must make good his position in science and as a practitioner of the healing art. In a recent address, Professor Christison has truly said that the first duty of a Professor is to teach, the second to advance the science and art of which he is the expounder. This volume, edited by Dr Watt Black, is what the world has to accept as Simpson's work in advancing the science and art which he professed. His special writings on Hospitalism and on Anæsthesia, and his *Medical Times and Gazette* lectures, are intended to form two other volumes, and are to be edited by his son and his nephew respectively. After all these are published, this first one will still retain, and justly, its place of pre-eminence. It contains the best of his hurried work; we say *hurried*, for almost everywhere in the volume we see traces of haste and of imperfection. These slight faults every one will expect, and probably also excuse, who knows the nature of Simpson's activity, his eagerness, his impatience, his restlessness, his versatility. Let us now look at the work itself. Before doing so we must make one evidently true general remark regarding it—namely, that, putting out of view such qualities as its fragmentariness, it has no such great features as will account for the author's great fame. That depended on the general history and character of the man, subjects on which we do not wish to enter, and greatly on one special point in his character, that he was possessed of originality and boldness, and therefore was naturally a leader.

One of the chief modern methods of advancing science is the use of statistics. Much has already been done by this engine, but as yet we only see the beginning of its powers and advantages. It has been applied to many masses of data which have been laboriously collected, or more easily brought together for the purpose, and the results already got are invaluable. But every day new and still newer observations are being made and recorded, from whose rude accumulation the statistical method will eliminate beautiful *arcana naturæ.* It was naturally to be expected that the ardent genius of our author should make him lay hold of this instrument. Unfortunately, his genius was often too ardent, and led him to treat statistics in an unscientific way, not calmly awaiting the dry and cold result of his analaysis, but vainly attempting to extort what he desired to find.

That Simpson had considerable knowledge how to use statistics, we need no further evidence than a perusal of his "Memoir on the Sex of the Child, as a cause of difficulty and danger in human parturition," which appears at page 307 of the volume now under review. It appeared in this Journal in 1844, and was nearly, if not quite, the earliest, and remains nearly, if not quite, the best piece of scientific work the author ever did. It is purely a statistical investigation, and the statistics were borrowed from the well-known collection of data by the great Dr Collins of Dublin. To this gentleman the work was dedicated when it was separately published, and it is melancholy to reflect how soon this traffic in civilities was changed into a long and bitter quarrel, full of petty personalities,—a quarrel over statistics! of all things, over statistics which neither of the parties, biassed as each was by the feud and otherwise, could get the courage to read aright ere he died.

Clarke and Quetelet, both statisticians, had pointed out the main and basic facts of this memoir, namely, that the heads of males are bigger than the heads of females, and that deliveries of male children are more difficult and dangerous than deliveries of female children. Further, Riecke had shown that males more frequently required extractive assistance than females. Here Simpson took up the subject, and with admirable precision and perspicacity stated it, elucidated it, and followed it out in a great variety of its bearings; showing, by his arrangement and conduct of the matter, that he had a natural turn for statistics, and knew its more simple methods of proceeding. The result is, that nothing now is more generally known than the matter of this memoir.

Although we wish to make no deduction from what we have said, yet we must add, that the causes of the special male infantile mortality are not yet known. Before this memoir was written, it was believed that males had a special liability to mortal ailments, and in this poor way was their mortality accounted for. Simpson rejected this view, and tried to show that the whole special mortality of males could be traced to the extraordinary size of the male head. His proceeding was quite logical. He believed he could statistically show that the special mortality was connected with the mechanism of passing this big head through the female passages. But his statistics were not equal to the strain he put upon them, and he was misled. He showed, however, the great importance of the special squeeze of the male head during its birth. In spite of his apparently sufficient demonstration of the exclusive influence of this compression, it remains a general belief among biologists that the male is, from his conception onwards till many years after his birth, specially liable to die, more liable to die than the female, more liable even than she would be did she get as severe a squeeze in birth as the male gets. Perhaps this circumstance might afford revengeful satisfaction to those who believe in the subjection of women, were it not that Simpson's lucid arguments clearly show that the poor mothers suffer quite as severely from the squeeze as their male offspring, and that there is no evading the demonstration of the injurious influence on them of the births of males.

As we have already hinted, Simpson was not always worthy of imitation in his mode of using statistics. It was especially in his later years that he was careless. Perhaps the recollection of his youthful triumphs with this analysis led him to resort to its aid in practical questions on which he had already unfortunately made up his mind. Few men have logical faculties so acute and minds so free of prejudice as to render them safe handlers of this analysis. If we look at the work even of our professed statisticians, some of them paid by Government to do the work, we find specimens of repeated and gross failure. We could easily give justification of this statement in the treatment of the influence of marriage, but we only refer to it in passing to another admirable specimen of Simpson's manipulation of figures—his paper on the alleged Infecundity of Females born Co-twins with Males. In the case of this memoir, he not only manipulated the numbers, he also laboriously collected them. This paper was also published in an ancestral number of this Journal, and it appeared before that on the Sex of the Child, to which we have already referred. It settles the question, which had been long an open one, showing that females co-twins with males are as fertile as women generally. In the end of it he has an excellent chapter on a subject to which he in later life paid much practical attention, the sterility of married women—a subject whose study has been truly sterile in a practical point of view, if we do not condescend to regard the collection of guineas as in itself a worthy object. There is a pregnant little sentence dropped by Dr Black at the end of a description of Simpson's treatment of sterility. It is Black's, not Simpson's. We wish it had been written by our author, whose pen was never dry. Though it is short it speaks both loud and long. Yet it speaks with a painful vagueness, and a vain pretence that exactness was possible and latterly practised.

"In consequence," says Dr Black, "of the gratifying results sometimes produced by incision of the cervix uteri in obstructive dysmenorrhœa and sterility, that operation became an extremely favourite one with Simpson. Certain risks connected with it, however—and in particular its liability to be followed by pelvic inflammation—inclined him ultimately to a rigorous selection of cases, and to the enjoining of recumbency for several days after the performance of the operation."—(P. 680.)

Nothing is more characteristic of modern progress than that it is mechanical. In every department of civilisation, in every department of science, progress is being made by applications of mechanism. In no department of human activity is this more clearly seen than in physiology and in the practice of medicine. Take for examples the stethoscope, the ophthalmoscope, the laryngoscope, the sphygmograph, the speculum. To this kind of progress Simpson contributed, and again it was done in the earlier part of his life. The probe had by many physicians been used in the diagnosis and treatment of uterine disease. But Simpson saw that this little simple instrument might be made a deal more of. With his usual zeal and energy he set himself to be the promulgator of the advantages to be derived from the use of the uterine sound, and so exhaustively and thoroughly did he do the work that that instrument is intimately associated with his name in the minds of gynæcologists. A clever French author has recently written a book on measuring and catheterizing the uterus, as he absurdly calls it, and has evidently the intention of diminishing the amount of credit generally awarded to our author in connexion with this subject. But it is a vain attempt. Simpson's papers, published in old numbers of this Journal, about the year 1844, will always be esteemed as clever and good articles, which give him a clear title, not to any discovery, but to great, indeed paramount credit, in connexion with the popularizing this instrument for the profession. Like a deal of his other works, his papers on the uterine sound were never finished. But they had another peculiarity. Some authors write even systems in this unwise way; we have, for example, a treatise on the diseases of women, where the diagnosis is made the main thread to which all the rest of the matter is tacked. It was on this plan that our author proceeded with the uterine sound. In describing its uses he got a centre around which he made to crystallize a great deal of gynæcological science and literature. These papers are well worthy of perusal, even although now they are a little antiquated. They evince a higher scientific tone than most of his later work.

There is no doubt that, through a lucky hit, an author often gains some reputation that he does not entirely deserve. Simpson had so much fame that it is not astonishing to find some of it not altogether merited, but the result of a lucky hit. In 1846 Dr Simpson wrote a short paper on the membrane sometimes expelled in dysmenorrhœa, and pointed out its true nature. But Simpson was not a great pathologist, and this paper contains several statements and arguments that were very wide of the truth. Nevertheless, it contained this important announcement as to the decidual structure of the membrane. Oldham had, before Simpson, made the same statement, and perhaps others in Germany before either. But really no one had much credit in the matter. Long ago, Hunter and Baillie had pointed out that the membrane of dysmenorrhœa was of the same nature as the decidua; and the decidua was of the nature of false membrane, therefore the membrane of dysmenorrhœa was false membrane. Nothing simpler. All repeated,—of course the membrane of dysmenorrhœa is false membrane. Then came the researches of Sharpey, Weber, Goodsir, and Coste, and the decidua was no longer of the nature of false membrane; it was hypertrophied mucous membrane. Well, of course, as the dysmenorrhœal membrane was of the same nature as the decidua (as Hunter and Baillie had shown), it was now not false membrane, but mucous membrane. Nothing simpler. It did not require half an eye to observe the true nature of decidual membrane. All saw it at once. Who made the lucky hit of doing it first? He has the right *sumere superbiam*, etc.

Simpson was very ambitious, intensely greedy of fame, of being talked about; and he was willing to work for his objects, to sweat, to live laborious days. He could not be content with the quiet dignity gained in the laboratory of the true scientific man. He resolved to make great innovations in practice that would create a noise. In addition, he systematically threw himself into every popular professional wave, and he always rose to the crest of it. Sometimes, as in the case of chloroform, he was eminently successful. Many a time he was not successful, but he was never discouraged, never wearied. The most elaborate paper in the volume now before us, is that on the Treatment of Placenta Prævia. It was his first great venture of the kind we have referred to, and it brought him notoriety enough. The excitement produced in the obstetrical world by his proposal can scarcely now be imagined. We have not had for a long time an obstetrical "row," and it is to be hoped we shall not have one again. They are affairs generally disgraceful to all concerned, sometimes dishonourable. The gladiators in the placenta prævia controversy were Simpson and his senior, but still surviving, Robert Lee. *Arcades ambo.* They carried fire and sword each into the other's territory, *alternando.* Sometimes Simpson had the best. He was always up to time. He had occasionally the advantage in his letters of a highly-prized pervading flavour or whiff of aristocracy, dating, of course quite accidentally, an epistle to Lee from Stafford House. If he could not hit him hard in the text, he had Ayscough's Shakespeare, or a volume of classified "Elegant Extracts," from which he could get a stinging motto to prefix to his article. Upon the whole, Lee got, in a literary point of view, the worst of it; but only in that point of view. It would be an "act of insanity," says Lee, "to tear away the placenta." Then rejoins Simpson (p. 295), quoting from the vaccine controversy, "'It would, undoubtedly,' as anxiously argued Dr Brown, some twenty or thirty years ago, 'be *downright* [italics are Simpson's!] madness to imagine they will condescend to encourage vaccination.'" So the foolish men wrangled and fought, Lee bawling "insanity," Simpson placing himself on Jenner's pedestal. Alas! after it is all now long past, we fear Lee has the best of it. He may take up the speech of Hamlet (Act v. Scene 1) and smile.

The placenta prævia affair was a splendid example of Simpson's ingenuity and power. He found everything ready-made to his hand, no doubt; but where would Hamilton's theory and Kinder Wood's or Radford's practice have been without the genius of Simpson? Nowhere, or where it is now, or where it should be. It was, we believe, Hamilton's opinion that blood, in cases of placenta prævia, ran from the detached placental surface. This opinion is the foundation of the practice of removing the placenta, which Kinder Wood, Radford, and Simpson recommended. There is not a particle of good ground for the opinion or belief, and, so far as we know, it is entertained by nobody. But Simpson adhered to it, and he thus got an explanation of his further opinion, that in cases of unavoidable hæmorrhage the bleeding ceased when the whole placenta was separated, the sources of supply being cut off. This farther opinion is also without sufficient grounds. Simpson attempted to get a basis for it in experience, and with marvellous zeal he hunted out every case of complete separation of the placenta recorded, not in his case-book, but in the annals of midwifery. His zeal outran his wisdom, for he forgot that spontaneous separation, as in the cases which he found on record, was a quite different affair from artificial separation—the practice which he recommended, with the vain expectation that it would have the same consequences as spontaneous separation. The proper course for Simpson to have pursued was to try his practice, get his friends to try it, and to abide by the result. He could not wait for this slow and sure and only true and satisfactory proceeding. He would first propose and force the treatment, and condemn Lee and all objectors, and trust to the good fairy being on his side, and to his practice turning out the proper one. It is a curious story. If the weekly journals were to be believed, the new treatment was successful; nothing but success and triumph to Simpson. But underneath there was truth beginning to appear—not in the weekly press. Reports of hospital practice, text-books, discussions in societies, were published, and all more or less repudiated the grand new successful practice. It would not, in vulgar phrase, go down. This turn of matters Simpson was quick to see; and he now fell to saying, he did not mean to supplant old practices;—the venerable turning and delivering, he considered still the great treatment. His new treatment, by separating and extracting the placenta, was only for such and such special cases; it was not a generally applicable treatment. But still the decadence of the novelty was evident, and now the grand and invariably successful and frequently applicable treatment is all but forgotten. It has, at last, a fair chance of being calmly considered and rightly judged, along with its puny progeny, the treatments of Cahen and Barnes. If anything was required to show that Simpson himself had at last lost faith in his own once glorious cause, it is furnished by Dr Black, in the form of a little sentence at page 295. This sentence Simpson would not have placed where it is. It is a bad sentence in every way. We believe Simpson never could have intended to have it published, for it casts an air of ridicule over all on the subject of placenta prævia that precedes it. To the admirers of Simpson it has a doubly melancholy aspect, for it was spoken in 1870. It is as follows:—"Sometimes the hæmorrhage might be stopped by simply separating a little more of the placenta than what had already been detached; for, as the bleeding came from the line of vessels between the placenta and the uterus which are on the stretch, the separation relieved the tension, and by this practice there is a greater chance of saving the child." Here is an entirely new set of opinions, quite inconsistent with the old Simpsonic opinions. Alas! Dr Black is not so astute as his master.

In the preceding pages we have criticised some of Simpson's labours, and here we stop. It would have been easy to proceed, but we have exhausted our time and journalistic space, and we are of opinion that our remarks will give a fair impression of the remarkable and never commonplace works of the late Baronet. Dr Watt Black has done his work honestly and well, and produced a fit monument of his master.

We conclude by saying that the syllabus of lectures, with which the work opens, should never have been published. It is in every respect unworthy of the place it occupies. To notice its varied faults would be unjust to Simpson, who, we are sure, never intended it for publication, and would never have given his consent to its appearing in print.

Smallpox and its Prevention, including Experiments upon the Lower Animals, etc. By EDWARDS CRISP, M.D., M.R.C.S., L.A.C., etc. London: 1871.

A New Method of Treating Wounds (Gruby's System), and the Medical and Surgical Aspects of the Siege of Paris. Outlines for a Non-Official Report to the Physician to the Right Hon. the Minister of State for India. (Including Investigations concerning Pyæmia, the Danger of the Introduction of Calf Vaccination into our Indian Possessions, the Tent Hospital System, etc.) By CAMERON J. F. STUART MACDOWALL, Surgeon Indian Army, 3d Bombay Light Cavalry. (Present during the whole of the siege.) London: 1871.

Letters on Vaccination. By WM. WOODWARD, M.D., Worcester. (Reprinted from the *Worcester Herald.*) Worcester: 1870.

On Some Advantages of Animal Vaccination for the Prevention of Smallpox. By A. VINTRAS, M.D., Physician to the French Hospital. London: 1871.

Letters to the "Times" on Smallpox Encampments, and a Word on the Contagious Diseases Acts. By Surgeon-Major T. ATCHISON. London: 1871.

History of the Smallpox Epidemic in South Shields, 1871. By ANDREW LEGAT, M.D. Edin., L.R.C.S.E., South Shields. South Shields: 1871.

THE opposition to the Vaccination Act has been, in many parts of England, really serious; and many people have been agitated and somewhat alarmed by the vehement assertions of the Anti-Vaccination League, whose existence is perhaps scarcely needed to prove that it is easier to prevent smallpox than to cure human folly. During the last two years an unusual number of books and pamphlets on vaccination have been published. They may be divided into three classes: expositions of the evidence accumulated of the great benefits derived from vaccination, written to reassure the public mind; suggestions as to how the assumed evils of vaccination may be guarded against; and, lastly, scientific inquiries into the nature of vaccinia, and the proper way of making the most of the immunity which it confers.

Dr Woodward of Worcester has issued a small tract of thirty pages which gives a very good résumé of evidence in favour of the great discovery of Jenner. It is to be had at the price of 4s. per dozen; and we should be well pleased to see all the opponents of vaccination who are able to read were served with a copy. As Dr Woodward has prefixed extracts from five favourable reviews to the beginning of the tract, it is to be supposed that they would commence its perusal in a favourable spirit.

The advocates of animal vaccination have had the luck to hit upon a subject by which they can introduce their names to the public without any serious amount of work and thought. In order to form a background for their argument, they generally commence by admitting that human vaccine matter has lost somewhat of its protecting power, and that syphilis is occasionally communicated by vaccination. They argue that lymph taken from the heifer has a superior protective power; that it is as easily inoculable as human lymph; that no constitutional disease can pass with it into the human system; and that, in case of a great epidemic of smallpox, a large supply of heifers' lymph could be more readily obtained, one calf being capable in five days of producing enough of matter to vaccinate at least five hundred people. As long as the matter was left in the hands of the preachers of animal vaccination, their proposal looked plausible; but from the inquiries made by Dr Seaton in Paris, Holland, and elsewhere, published in Mr Simon's Twelfth Medical Report to the Privy Council, it was shown that lymph taken directly from the heifer loses its activity so quickly, and is, as compared with human lymph, so difficult to inoculate, that Dr Vintras has little reason to complain if we pay no attention to his arguments until he has replied to those of Dr Seaton, which he does not even allude to.

We shall, however, reproduce the evidence which Mr Macdowall has given us bearing upon the correctness of Dr Vintras's statement, that "heifer's lymph nearly always gives a positive result, and revaccination a means of success greater than that derived from human vaccine."

"Dr Quinquand had one-third successful cases with the virus from the calf, but *all* his cases were successful with virus from a child's arm" (Jennerian vaccine, as the French complimentarily call it). "Dr Thevenot, with calf vaccine, had only two successes in twenty-one cases."

Thirty-two surgeons in Paris during the siege sent in reports on vaccination from the calf. *One* says that vaccine from the calf became much better after transmission through the arms of three or four children, though bad and difficult to introduce the first time; "the rest (thirty-one) found vaccination from the calf most provokingly unsuccessful, succeeding at the very utmost only in a fourth of the children vaccinated directly, and *much* less from calf virus tubes or glasses. The vaccine pustules were always small, and contained little real matter, and much epithelium. The fifth day is recommended for collecting the calf virus. Calf virus, which has *spontaneously* appeared on the animal, has been found to be better than that which is inoculated—given to the calf from a child's arm. It is a rare disease, however, amongst the herds, and it is difficult to find a single case."

Of sixteen other reports of medical men who tried the calf virus, no less than thirteen seemed to have failed completely. Dr Gaillard, who succeeded 170 times out of 283 children with calf vaccine, succeeded 2740 times out of 2856 with Jennerian vaccine.

While thanking Mr Macdowall for his information, we venture to suggest that it would have been better if he had read a little more on the subject, when he might have saved himself the trouble of asking whether experiments have not been made to inoculate the cow with human smallpox. As his experience in Paris has given him a very poor opinion of animal vaccination, Mr Macdowall is fearful that this practice should be introduced into India, as he imagines that the natives would be more inclined to adopt it than to suffer vaccination from human lymph. We are not very sure about this. Perhaps the Hindoos would consider it a gross piece of cruelty that a calf should be tied up and tormented with sixty or seventy punctures in its teats; for they seem kinder to cows than to human beings; besides, we remember being informed by a Hindoo that the reason why they objected to being vaccinated was that they believed that, by successive vaccinations, their descendants would get to resemble oxen.

Dr Crisp's pamphlet contains some original observations and experiments upon smallpox and vaccination. We are content to take the opinion conveyed in the following remark:—"The evidence as to the propagation of syphilis is very incomplete; but it is not unlikely that when blood is introduced with the vaccine lymph (a very rare occurrence) that syphilis may be induced; but I cannot find any well-authenticated case recorded in this country."

It has been proposed, especially for those who are afraid of the contagion of some other disease being introduced by vaccination, that the crusts should be preserved and used instead of the lymph. There is no doubt that the crusts, if the air be excluded, can retain their virtues for years. In America the scab is generally used instead of the lymph. Medical men could thus easily keep a supply of vaccine matter derived from sources to which the most suspicious parent could offer no reasonable objection.

Dr Crisp believes that the sheep is the only animal besides man that is affected with genuine smallpox. "Smallpox in the sheep probably first appeared in England in 1710, and was described by Dr Thomas Fuller in 1730. Other outbreaks occurred in 1847 and 1862. I have had opportunities of studying this disease, and of examining sheep after death. The disease in many respects resembles human smallpox, and is quite as contagious; a diseased flock is said to have infected other sheep five hundred yards off. The pustules, as shown in the drawings, and in the model of the sheep's head on the table, are larger, and they remain for rather a longer period." Vaccination has been tried, without satisfactory results. Inoculation, as first shown by Hurtzel in France, and more recently by Messrs Marson and Simonds, reduces the mortality from 50 to 5 per cent. Professor Gamgee prefers isolation, believing that, as in human smallpox, inoculation serves to spread the disease.

Dr Crisp has tried to inoculate a large number of animals, including monkeys, with smallpox matter, but has always failed. He finds, from the Registrar-General's Reports from 1851 to 1860, "that of the 42,071 deaths from smallpox during these ten years, 26,102 were children under five years of age, and 35,007 under fifteen." Hence he is inclined to revaccinate at an earlier age than is generally recommended. Dr Crisp also remarks that, in the revaccinated, a person with one good cicatrix is not more likely to have cowpox than another with three or four. It is not, however, easy to throw discredit on the striking statistics of Mr Marson, quoted in Reynolds's "System of Medicine," showing that the mortality in those seized with smallpox diminishes with the number of vaccine marks. Dr Crisp made a number of experiments which show tubercle, or what is believed to be tubercle, is not produced in animals by inoculations from vaccine lymph, though he has succeeded in producing tubercle in the same animals by the inoculation of pus and other substances.

We now come to Surgeon-Major Atchison, who would fain lay hands on all who have smallpox, and, "without favour or distinction," convey them by a well-regulated ambulance to the nearest waste lands or commons. He prefers a high and airy situation, or near a river where there is a current of pure air. In such localities Mr Atchison would lodge his patients "in tents, thatched huts, wooden sheds, and any other movable apparatus suitable for the emergency," among which he mentions "thatched barges, unused steamers, or well-ventilated vessels at anchor." In this manner, Mr Atchison engages, "with one-fourth of the amount as yet expended, to provide for all who may become sufferers from smallpox in London," and, on the disappearance of the disease, to burn the camp to the ground. He would also establish a strict quarantine, especially against "the great disseminators of the poison—viz., the laundress, the communicative friend or relative, and the medical man, unless duly careful." "There are many subordinate details," Mr Atchison observes, "connected with the encampment of the sick *in this climate* which can easily be mastered by an energetic will." Yes, but there are a good many details which cannot—for example, a damp variable climate, north-easters, frost and snow, rain and sleet; and we would recommend the critics of the "British Medical Journal," "Medical Times and Gazette," and "Lancet," who have endorsed this preposterous proposal, to go and live in a tent, whilst they are yet in good health, for a few days at the four seasons of the year; and we venture to assert they will never again recommend the proposal of entrusting the sick to the care of the Surgeon-Major with his energetic will and Indian experience.

Mr Atchison talks of buildings used to lodge the sick as being sources of future infection. It is the custom of some writers to discourse in a vague way of hospitals being the cause of pyæmia and gangrene, and to assume that we would get rid of these dreadful maladies if the sick were lodged in tents or wooden huts; nevertheless, a very large proportion of the French wounded at the siege of

Paris by the Germans were lodged in temporary erections, and "yet the mortality from pyæmia and gangrene amongst the wounded and amputated is known to have been greater than has ever occurred before in the annals of military surgery." [1]

Dr J. Worms, the "Inspecteur of the Service Médicale" (Sanitary Commission), told me, says Macdowall, *vivâ voce*, that, "in round numbers, all the cases of amputation in the last few weeks of the siege died; that the case was the same with nearly *all* the wounded who were not operated upon; and that the deaths were almost all from *infection purulente*."

Dr Gruby, Mr Macdowall assures us, had not a single case of pyæmia and gangrene among his patients. His treatment of wounds consists simply of keeping them from the air by means of cotton-wool soaked in oil. So fearful is he of introducing germs upon exposed surfaces, that he is unwilling to wash them with water unless it has been previously boiled.

Mr Macdowall served as an unpaid volunteer in Paris during the siege, and his pamphlet is full of interesting information.

Dr Legat attributes the spread of smallpox in South Shields mainly to the neglect of the local authorities to carry into execution the Sanitary and Vaccination Acts. In common with most men acquainted with questions of public health, he despairs both of local boards and of local sanitary officers. He would have the central government to maintain an officer of health for each locality. "To attend to everything coming under the scope of the Sanitary Acts in force, requiring an intelligent and specially-trained officer, would constitute his duties. He should be a man, in my opinion, wholly free from the engagements and hindrances of private practice, so as to make him thoroughly independent in action." We cordially endorse the latter proposition. Local sanitary officers are often more to be blamed than local authorities, especially as they cannot always plead ignorance, like the boards which employ them. Practitioners in small towns and country parishes have rarely the courage to wage real war on nuisances.

The General Structure of the Animal Kingdom. By THOMAS RYMER JONES, F.R.S., etc. London: John Van Voorst.

THIS book is already so well known that any lengthened notice of it would be altogether superfluous. The fact that it has already passed through four editions is sufficient guarantee of its excellence. Written throughout in a clear and scientific manner, and yet with a freedom of style which is only too rare in books of this sort, this edition, like its predecessors, cannot fail to commend itself to the student of comparative anatomy. The perspicuity of the writing is fully equalled by the accuracy of the facts.

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[1] Macdowall, p. 12.

The only point which we think might with advantage have been changed in this edition is the classification. This, with due deference to the author's opinion, expressed in the preface, "that changes in classification are rather calculated to embarrass than to facilitate the progress of the student," we are of opinion is now somewhat antiquated, and apt to give rise to a certain amount of confusion in the mind of any one accustomed to peruse the later works on zoology and classification of animals. With this trifling exception, however, we can heartily recommend the "Outlines" as at present the best general text-book of Comparative Anatomy in our language.

On Dactylitis Syphilitica. By R. W. Taylor, M.D., Surgeon to the New York Dispensary. New York: F. W. Christern: 1871. Pp. 30.

This pamphlet is a reprint from the American Journal of Syphilography and Dermatology, and treats of an affection apparently little known, but yet, in all probability, not uncommon. The affection here called dactylitis syphilitica (from δακτυλος, a digit) is a chronic inflammatory or exudative affection of the subcutaneous connective tissue, ligaments, periosteum, or bone of the fingers or toes. The characteristics of the affection, as pointed out by Dr Taylor, are interesting. Though often resembling, in some of its stages, other affections, such as periostitis, paronychia, or exostosis, it differs in this important point that it is amenable to constitutional treatment. The worst that can come of this disease, if seen early and properly treated, is contraction of the digit from absorption of bone, or exfoliation of a portion, should suppuration have occurred. A very interesting series of cases is recorded by Dr Taylor, one of which occurred in his own practice, and drew his attention to the pathology and literature of the disease.

The paper bears the general characteristics of a carefully-prepared and well-written essay, such as we are in the habit of hearing read before our own Societies; and will be interesting to any one who, like the writer, has met with an illustrative case.

The Dental Profession: A Letter to the Editor of a London Newspaper. By a Dental Surgeon. London: Robert Hardwicke: 1871.

Nothing could be more opportune than the publication of this letter. The subject discussed is one which must long have filled the mind of every legitimate practitioner with disgust,—namely, the assumption of surgical titles by individuals possessing neither surgical education nor diploma of any recognisable description. Dentists, of all other departmental practitioners, seem most guilty of this species of deception; and the explanation appears easy. In this branch of the profession, the danger to life is slight, and the probability of a conviction for manslaughter proportionately small. Pretenders to a scientific status thus find an opportunity of implying that they are surgeons or something akin, without entailing their ignorance being discovered.

In England this is more particularly the case, as is borne out by the puffing announcements of the charlatans who so often figure in the daily press. But even in Scotland—taking a very liberal view of the matter—certainly one half of all the dentists employing such a prefix as "surgeon" have no claim to it, unless it be accorded to those who are not surgeons at all. What of the Medical Act here?

Part Third.

MEETINGS OF SOCIETIES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXX.—MEETING XIII.

Wednesday, 24th May 1871.—Dr BELL in the Chair.

I. CASES OF ADHERENT PLACENTA.

Dr Keiller exhibited a placenta with clots which he had removed from a patient on Monday morning last. He found that the placenta was not separated, and on introducing fingers to hook it down he found it adherent, and required to be detached. On its removal, a small portion was still left adherent, and on extracting the membranes he found that portion attached to them. The uterus did not contract satisfactorily, which might have been due to the chloroform, which had a marked effect on the strength of the pains. Ergot was given, but the patient lost a good deal of blood and ran a great risk.

Dr Cairns said the case reminded him of one he had lately been called to. The patient had been attended by a midwife, who stated that the afterbirth was all right, but subsequently severe hæmorrhage occurred, and was only stopped by the removal, several days after, of a portion of the placenta which had been left in the uterus and was protruding through the os.

Dr Rattray said that he expected to have been able to show to the Society a placenta the cord of which measured only 10½ inches, but it was too much decomposed to bring with him. In a previous labour the cord was found to be 13½ inches. The labours were easy.

Dr Bell agreed with Dr Keiller in the propriety of pushing the finger through the root of the cord to assist in its removal, when the cord was weak. He had often adopted this plan with success.

Dr Sidey said that he had recently had a case of adherent placenta, and referred to sacculated contraction of the uterus, which was generally found at the upper and back part of the womb.

Dr Keiller also mentioned a case he had had of large flattened adherent placenta without hæmorrhage.

Mr Pridie alluded to hour-glass contraction as a cause of retention of the placenta and hæmorrhage.

Dr Pattison said he did not believe in hour-glass contraction. In his younger days he thought he had met with it, but later experience had changed his views.

Dr Keiller could not see why we should not have so-called hour-glass contraction—the muscular fibres acting so as to cause contraction and retention of the placenta; but he thought that the name was unfortunate.

Dr Bell said his difficulty was to understand how a uterus 16 inches in circumference should contract so as to prevent the passage of the finger. He thought it was a wise provision that the cervix contracted in some cases even before the placenta was expelled, and in this way might cause its retention; but he could not understand how such a contraction in the body of the organ could take place, as the arrangement of the uterine fibres did not explain it, they being oblique, whereas in the cervix they are circular. There might be irregular contraction of the fibres on one side enclosing the placenta, but he doubted the occurrence of hour-glass contraction as it was generally described.

Dr Keiller observed that, while it was true that the fibres of the cervix were circular, the fibres of the fundus interlaced in all directions, and hence, by their contraction, after the removal of the placenta, hæmorrhage was prevented.

Dr Ritchie had recently had a case of adherent placenta, and in attempting to separate it, a portion remained in the uterus. It was separated with some difficulty; the patient lost a good deal of blood, but made a good recovery.

II. AN INSTRUMENTAL LABOUR, COMPLICATED WITH ADHERENT PLACENTA AND HÆMORRHAGE. BY DR CUTHBERT.

About 9 P.M., on the 16th April, I was summoned to see Mrs W., who was in labour with her ninth child. I found her in bed. Pains at short intervals and weak; os fully dilated; membranes unruptured, and the head above the brim. I also found the antero-posterior diameter diminished in consequence of a flattening of the pubes. Progress of labour very slow. I ruptured the membranes, and at eleven o'clock gave ergot, which, in about thirty minutes, improved the pains.

In her last confinement, Mrs W. was delivered of a very large child by the help of the forceps; and as she had suffered a great deal on that occasion, she besought me to use them now and relieve her. The child in the present labour was also very large; and I found that the head was making no progress, but remained immovable on the crest of the pubes. The labia and the soft parts generally were very much swollen and congested.

Being of opinion that it was necessary to use them for my patient's relief and safety, I introduced them about twelve o'clock. They were easily applied. When I got the head as low down as the perineum, I took them off. The head was born with some difficulty, but when the shoulders took up their position at the outlet, I had the greatest difficulty in getting them through. The right shoulder got hitched above the pubes in the same way as the head, and, owing to the extreme breadth of the chest, they were firmly grasped by the surrounding parts. I could scarcely get down an arm to release the infant. At length I managed to get the right arm born, which relieved the constriction, and the labour was soon completed. The child gasped several times before respiration was fully established, and, before securing the cord, I allowed a dram or two of blood to ooze away, which relieved the infant considerably. The child was very large. Waited half an hour, but the placenta did not come away. I then introduced my left hand, and found it adherent on the posterior wall of the uterus. It was carefully peeled off, and the whole mass was brought away. About a third of its surface was adherent. On withdrawing the placenta, a pretty smart flooding took place. I immediately gave a full dose of ergot, grasped the fundus firmly with my left hand, and applied cold to the vagina and over the region of the uterus. This was persevered in till all hæmorrhage ceased; after which the wet and soiled linens were taken away, and a binder with a compress applied. In about an hour after delivery a violent shivering, with quick gasping respiration, came on, and the patient complained of cold coming on suddenly, and extending along her legs, thighs, and body. On applying my hand over her knees and face, I felt them ice-cold. The pulse at the same time became quick and feeble; but there was no hæmorrhage. I gave her a wineglassful of whisky, which was repeated in fifteen minutes. A bottle of hot water and a hot brick were applied to the feet and legs; friction applied to the limbs; and more bedclothes heaped on. In a short time reaction set in; the pulse improved; and in three-quarters of an hour the attack had passed away. I left about 3 A.M., leaving my patient quite comfortable. Mrs W. made an uninterrupted recovery.

The following are the child's weight and measurements at birth: Weight, 12 pounds; length, 22½ inches; circumference of the shoulders, 18½ inches; circumference of the hips, 14½ inches.

Remarks.—This case illustrates very well the value of the forceps applied early. There is no doubt that the flattening of the pubes and the great size of the child were the chief causes of the difficulty.

The head lay, as it were, hitched on the pubes, and from this position it would not move. The right shoulder was caught in the same way, and this of course was another source of difficulty. The swelling and congestion of the labia and surrounding parts, caused by pressure, also demanded immediate relief.

The shivering, with extreme cold, no doubt was caused by the shock to the nervous system. After tedious and complicated labours, the collapse is sometimes very great, and may even lead to fatal consequences if the patient does not speedily rally.

I have stated that my patient, in a previous confinement, was delivered by the aid of instruments. On that occasion, I believe there was also adherent placenta followed by severe hæmorrhage. A sketch of the history of the case has already been given to the Society.

In conclusion, allow me to remark, that it is easier to remove an adherent placenta with the left than with the right hand, especially when it adheres to the posterior wall of the uterus. This will appear more evident, if we remember that, as the patient lies usually on her left side, the axes of the pelvis and uterus are parallel to the bend of the left arm. I would therefore recommend practitioners, especially the junior members of the profession, to accustom themselves to manipulate with the left hand in cases of adherent placenta or in turning.

Dr Keiller remarked, that hitching of the head or shoulder on the pubes was a not uncommon cause of difficult labour. The shape of the woman had much to do with its occurrence, in cases, for instance, where the curves of the spine were very marked. It is important in such cases that the uterus should be supported to allow the head to enter the pelvis in proper position.

Dr Bell said that in introducing the hand to remove the placenta, much would depend upon its position. If placed posteriorly the left hand would be used more easily, and if anteriorly or laterally, the right.

III. ON POST-PARTUM DIETETIC TREATMENT. BY DR CAIRNS.

A few days ago, I was asked by the senior Secretary of this Society if I could furnish a short paper for this meeting, the reason being, I presume—although none was assigned—a dearth of matter. Having the interests of the Society deeply at heart, and bearing in mind that it professes to deal rather with practical than theoretical subjects, the after dietetic treatment of puerperal women immediately suggested itself to my mind as a subject of prime importance, and one likely to give rise to a considerable amount of interesting discussion between the elder and younger members of the Society. I accordingly selected that subject, and duly intimated to Dr Ritchie that I would do my best either to read or transmit a short paper upon it to the meeting of this evening. That paper I now respectfully submit for your consideration. But for a recent enactment, whereby the Society restricts members to certain limits in the reading of papers which they produce, I would have discussed the whole subject of post-partum treatment, including as well the use of binders, and the use of purgative medicines as articles of diet. Your new regulations, however, prevent this, and therefore I shall confine myself *almost entirely* to the simple treatment of diet, reserving the other parts for a future occasion.

To come now to the point under discussion, viz.:—"What is the *correct* and *common-sense* treatment of women in point of *diet after labour ?*" The general answer to that question is this,—"Every parturient woman requires a dietetic regimen suited to her particular state and condition." That is to say, no absolute rule can be laid down applicable in all circumstances to all women without exception. For example, a woman after her confinement may not only have no desire for food, but a positive loathing of it, and to force her to take it in such circumstances would only be productive of harm instead of benefit, inducing in all probability acidity of the stomach, flatulence, and diarrhœa. Again, some women have very marked idiosyncrasies in reference to certain articles of diet. Some cannot eat an egg, others cannot eat beef, others mutton, etc., without producing very serious symptoms. While, therefore, I acknowledge that it were rash in the extreme to lay down any one invariable and fixed rule as to what kinds of food should be administered in puerperal cases, I humbly venture to allege,—Primo, *That the diet should be nutritious in point of quality.*

For several years past I have been in the custom of asking all my new patients, both in private and dispensary practice, what sort of food the "doctor" allowed them to eat after their confinement; and the invariable and uniform answer I have received to that question has been as follows:—"Oh, doctor, just the usual things." "And what things, may I ask, are these?" "Oh, just breadberry and water-gruel." This forenoon I asked a patient who has just come from the country—where she had been delivered of ten children, and who has now been delivered of her eleventh, still-born, owing to shoulder presentation, age of patient, and length of time allowed to elapse before medical assistance was called in—the very same question, which was followed by the usual answer, with this addition, that she was kept under that treatment for *ten* days during *all* her confinements; whereas in most other cases I have found it limited to the fifth or sixth day. Such treatment, I humbly maintain, is utterly inconsistent with the principles of obstetrical pathology. I wish I had time to inform the younger members of the Society the real meaning of the term "Labour," because I am certain if they knew what it actually expresses, they would at once perceive the necessity, on purely pathological grounds, of *feeding* nd not *starving* their puerperal patients. The word "labour," ever, in our own language, sufficiently expresses what a woman has to suffer in the act of parturition. During a pain the acceleration of the pulse, the profuse perspiration, the contorted features, and the agonizing cries, etc., of the patient are quite enough to convince even the veriest novice that she is *labouring* in a *manner* in which no *man*, however hard his struggles, *ever did* or *could* suffer as she does. This being so, consider the *waste* of *tissue* to which she is subjected *during* her confinement, and you *must see* that, unless that waste be supplied by proper and fresh materials, the patient's strength must necessarily be very much reduced below its normal condition; and should any untoward event happen to her in these circumstances, the prognosis must essentially be infinitely more unfavourable than if her system had been duly sustained by generous diet. On these grounds, I have always been in the custom of liberally administering to my puerperal patients the most nourishing food which their circumstances enable them to procure, such as soft boiled eggs, beef-tea, soups, chops, steaks, tripe, etc., with a glass of wine daily in addition, or, if the patients prefer it, a glass of ale or porter; and this treatment, I humbly aver, is based on sound pathological principles.

Secundo, *The diet should be small in quantity and frequently repeated.* During labour the digestive and assimilative powers are weakened, as well as other parts of the system, and to exhibit large quantities of food in these circumstances would be to entail upon the stomach a much greater amount of work than it is able to accomplish. That organ fulfils its duties better perhaps than any other organ in the human system, and just because it seems to know that if it fail in the discharge of *its* functions, every department of the great and mysterious laboratory contained in the human frame will be thrown into confusion and disorder. But, for the very reason now mentioned, the organ alluded to should be treated with especial leniency and kindness. It is so willing to work that it should never have devolved upon it even such an amount of work as itself is willing to undertake; it is so obliging and so apt to exceed its own powers that it should never be allowed an opportunity of doing so. Administer more than it can easily digest, and it will tax itself to the utmost to digest what remains in excess, when, after finding its efforts abortive, it either ejects the undigested articles by the mouth, or expels them by the gut, or allows them to remain and undergo fermentation—all of which is most unfair treatment to the stomach, and consequently highly prejudicial to the patient. I say, therefore, let food be administered in small quantities at a time, and at such intervals as shall have ensured the complete digestion of the previous diet.

Tertio, *The diet should be varied in kind and form.* Monotony is death, variety life, to the human soul. The eye tires in time of the sublimest spectacles, the ear of the sweetest music, and the tongue of the most delicious morsels. Even in health the richest viands, when continued from day to day, become unpalatable and even nauseous. A change of diet, in short, is indispensable to a proper relish for food and the maintenance of the appetite. And if so in a normal condition of health, how much more on a bed of sickness. In puerperal cases, therefore, common sense seems to suggest that, with the view of stimulating the appetite and imparting to the patient a positive relish for food, every advantage should be taken of the culinary art in dressing the same article in different forms, and when these have been exhausted, that one article should be substituted for another during the whole period of the patient's convalescence.

Dr Pattison asked when Dr Cairns began to give the nourishing diet?

Dr Cairns said, on the day of confinement.

Dr Keiller said that communications on the same subject had been read at the last meeting of the British Medical Association, and most of the speakers who took part in the discussion were in favour of the views contained in Dr Cairns's paper. The dietetic treatment should be regulated in accordance with the habits and circumstances of the patient. He thought that the sloppy treatment was fast going out.

Dr Menzies did not think the breadberry and water-gruel treatment was so much in vogue as formerly.

Dr Bell said that for thirty years he had followed one plan. Immediately after delivery, he gave a glass of whisky, brandy, or wine. In one case in which this had not been given, he had cause to regret the omission. He agreed in the propriety of keeping up the system, but much must of course depend on the habits and constitution of the patient. In most cases, he was in the habit of allowing butcher-meat and wine on third day. He referred to the case of the late Princess Charlotte, who sank from exhaustion consequent upon hæmorrhage. She had only water-gruel—no stimulants. In Shetland, he understood that a bottle of whisky was given to the patient immediately after delivery, which she was expected to drink in the course of her recovery.

Dr Sidey said that the state of the tongue, rather than the length of the labour, guided him in his dietetic treatment. The tongue was often dirty, even when the labour was easy. When the tongue is clean, diet of the kind recommended by Dr Cairns might be safely given, but the same would not do for the other class.

Dr Ritchie agreed theoretically with Dr Cairns's recommendation, but found that practically he frequently required to give a less nourishing diet, especially in those cases in which the tongue was foul.

SESSION XXX.—MEETING XIV.

Wednesday, 14*th June* 1871.—Dr BELL, *President*, in the Chair.

I. *Dr Rattray* exhibited A SMALL CALCULUS which he had extracted from the urethra of a boy, who had for some time previously suffered severely from spasmodic pain.

II. *Dr James Young* showed a specimen of CALCAREOUS MATTER which had been lodged in some of the bronchial tubes for some years, causing severe cough, but which suddenly ceased on the man having expectorated.

III. CASES OF PHLEBITIS AND FACE PRESENTATION.

BY DR CHARLES BELL.

So much has been said and written against lying-in hospitals recently, that I should have hesitated to bring again any cases treated in them under your notice, had I not been satisfied that the prejudices against such institutions were not well founded, and that the high rate of mortality in some of them was not owing to their inherent nature, but to their being overcrowded and ill managed. I repeatedly expressed this opinion to the late Sir James Simpson, who admitted that it was correct. After his remarkable philippic against maternities, in which he stated that their ordinary mortality amounted to 1 in 29, I asked him if he was aware of the statistics of his own hospital? He replied that he was not; and when I told him what they were, he expressed his surprise; and, at a subsequent public meeting, he corrected his former statement by giving the correct account of that institution at that time.

Being desirous of proving the correctness of my views, I took a deep interest in the Royal Maternity, to which I had been appointed one of the Ordinary Physicians, and I resolved to avail myself of the opportunity it afforded of carrying them into effect as far as possible, and it fortunately so happened that I had almost the sole attendance of the Hospital for nearly ten months consecutively, which gave me great advantage. But although I had the concurrence of Sir James Simpson, I found it no easy task to effect its improvement; as I met with strong opposition from some of those who had the management, or rather mismanagement, of the institution.

It would be difficult to imagine any public institution more disgusting and thoroughly mismanaged than the Royal Maternity was when I joined it. The wards were filthy in the extreme. The beds were not fit for human beings to occupy; the food of the patients was so bad and ill cooked that they frequently could not eat it. It was not remarkable, therefore, that the mortality should have been comparatively high, although it did not amount to what Sir James Simpson represented was the case in similar institutions.

Fortunately for the sake of Edinburgh and humanity, an active and judicious house committee was appointed, and soon established some admirable regulations, which were fully carried into effect by our excellent matron, Mrs Hay, who had had great experience in the management of such institutions, and, in consequence, a complete reformation was brought about in the appearance and comfort of the hospital, which was soon illustrated by the improved condition of the patients, and the remarkable diminution in the mortality, both among the mothers and the children. The maternal deaths diminished from 1 in 66 to 1 in 223; while the deaths among the children fell from 1 in 5·74 to 1 in 24. These beneficial results were, in a great measure, to be accounted for by the marked attention paid to the personal cleanliness of the patients, who were bathed with a solution of Condy's fluid twice a day after their confinement; and to their number being limited according to the size of the wards, which were regularly purified and well ventilated; and to the mothers being induced to suckle their children so long as they remained in the hospital.

These statistics form a favourable contrast, not only to what is reported of other maternities, but to the general results of private practice, which, if I mistake not, are stated by Dr Matthews Duncan to be 1 in 108. I am therefore justified in repeating the assertion, that the high rate of mortality in lying-in hospitals is not dependent on their inherent nature, but on their mismanagement. This fact appears to be strengthened by the consideration of the following table of the cases treated in the Maternity from the commencement of the regulations I have referred to until the end of December last, being a period of nearly fifteen months:—

Number of patients, .	223	Forceps cases, . .	8
Primiparæ, . . .	171	Turning „ . .	2
Multiparæ, . . .	42	Cephalotripsy, . .	1
Number of operations, .	11	Deaths, . . .	1[1]

With these preliminary observations, I shall now relate a few cases which came under my observation many years ago; and as they give an illustration of phlebitis, a disease of rare occurrence, except in hospital practice, I think they may be interesting to the Society.

Case of Phlebitis.—Mrs Cousins, aged 30, a large flabby woman, having a very unsettled expression of eye; was delivered of her third child, a girl, on the 20th November, after a natural and rapid labour, being at the full period of gestation. Immediately after the expulsion of the afterbirth there was considerable hæmorrhage, which continued to come away for two hours in a small stream, notwithstanding that two drachms of the ergot of rye were given, and vinegar and water were injected into the vagina.

She stated that for two months previous to her labour coming on she had severe pains every Thursday afternoon, which led her to think that she was going to miscarry, until she found that they gradually went off; and this being Thursday she was under the impression the same result would take place.

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[1] This occurred in a primipara, who had been in labour for five days previous to her admission to the hospital, and exposed to frequent examinations. She had a small pelvis, and the position of the fœtal head was very obscure at first.

22d Nov.—Was seized with severe rigors at 4 A.M.; pulse 100 and very intermitting; no pains. She had three grains of calomel and five of antimonial powder in hot gruel.

9 A.M.—Had slight pain on pressure above the pubes; pulse 120, more regular.

8 P.M.—Pulse again intermitting; no pain; bowels freely moved.

24th Nov., 10 A.M.—Complained of severe pain in her left leg, in which she had formerly suffered from varicose veins. On examination the saphena major was found much enlarged, hard, and painful to the touch, particularly at the calf of the legs and the middle of the thigh.

Four leeches were applied to this part, and the whole limb was enveloped in a linseed poultice for some hours, and when the poultice was removed the liquor plumbi acetatis was applied. She became much exhausted towards evening in consequence of her bowels being frequently moved.

25th Nov., 8 A.M.—The pain much increased, and the swelling had extended up the limb; pulse 120, less intermitting. Eight leeches were applied along the course of the vein, and after they came off a linseed poultice was applied, and she had ten grains of Dover's powder in warm gruel.

At 4 P.M. she was again attacked with rigors, and became quite delirious. When she spoke her tongue appeared to be too large for her mouth, and her lips were much distorted. To have six grains of calomel and four of antimonial powder in gruel.

At 10 P.M. Dr Rigby ordered her to have three grains of camphor and five of hyoscyamus.

26th Nov.—She vomited the camphor and hyoscyamus, but she had some sleep during the night, and she spoke more coherently. There was less pain in the leg, but she complained much of her wrist, which was slightly inflamed. Her eyes were much suffused; tongue was coated with a whitish slimy fur; pulse 100, and weak; passes her stools involuntarily. To have the camphor and hyoscyamus pills every two hours.

6 P.M.—More delirious; her eyes more inflamed; bowels freely moved. She seemed to have no pain in her leg, but her wrist was acutely painful. Pulse full and soft. Dr Rigby ordered her to have half a grain of the acetate of morphia and one ounce of camphor mixture every two hours until sleep was procured; and to have four grains of gray powder and the same of Dover's powder at bedtime.

At 9 P.M.—Pulse 64, very weak; skin cold. She was much inclined to talk and pick the bedclothes. To have three grains of camphor; to be repeated if the pulse did not improve.

27th Nov., 2 A.M.—Has had the camphor once, and the morphia twice, and she was in a state of great excitement, requiring two nurses to hold her in bed. It became necessary to put her in a strait-waistcoat, after which she fell asleep.

At 2 P.M.—Has just awoke from a sleep of nine hours. Pulse very feeble; eyes suffused, and speaks indistinctly. To have sago and wine.

About half an hour after last report Dr Rigby saw her, and ordered her to have brandy and an egg beat up together, and to continue the camphor and hyoscyamus.

Dr Hugh Lee saw her about an hour after, and ordered the brandy and egg to be omitted, and that she should have twelve leeches applied to the temples. The result was, she immediately sank into a stupor, and died at 9 P.M.

2. *Case of Phlebitis.*—On 15th December Sarah Masterman, aged 23, a well-formed, florid-complexioned, unmarried woman, was delieved of her first child, a small boy, apparently in the eighth month; she having menstruated in the beginning of April. Her labour was rendered tedious from the head presenting in the fourth position.

17*th Dec.*, 10 A.M.—She has had no complaint except that she has had a cough, which came on before labour, until this morning, when she had a severe rigor, followed by pain above the pubes. On examination the uterus felt large and tender; skin hot; pulse 107, small and compressible; tongue clean and moist; bowels moved by castor-oil yesterday; lochia scanty; milk plenty.

A linseed poultice to be applied to the abdomen, and to have three grains of calomel and five of antimonial powder, to be followed in four hours by a dose of the saline mixture.

9 P.M.—She feels better, and has less pain on pressure. Perspiring freely. Bowels moved after taking three doses of the saline mixture.

18*th Dec.*, 8 A.M.—The pain in the abdomen quite gone, and she only complains of cough. She, in consequence, unfortunately got out of bed and sat for some time.

4 P.M.—Is now suffering from pain in her right groin, extending down the thigh in the course of the saphena vein, which is exceedingly tender to the touch. Twelve leeches to be applied to the most painful part; after the leeches come off a linseed poultice to be applied to the abdomen and thigh. To have two grains of calomel and five of antimonial powder.

19*th Dec.*, 10 A.M.—Has no pain.

4 P.M.—Her cough has become very troublesome, and is accompanied with bloody expectoration. She complains of great breathlessness. Pulse 120, small and resisting; face flushed; tongue clean and moist; skin hot. To be bled to the extent of twelve ounces. To have one grain of calomel and five of antimonial powder, and in two hours after to begin to take the eighth of a grain of tartar emetic, to be repeated every half-hour, in solution.

11.36 P.M.—Perspiring profusely; has less cough and breathlessness. To continue the antimony while awake.

20th Dec., 7 30 A.M.—Has passed a pretty good night, and has less difficulty in breathing. Cough less frequent. Bowels freely moved. Pulse 84, feeble, and she feels weak; tongue clean and moist; countenance pale.

11 A.M.—Bowels again moved, but she has not passed water since yesterday. The catheter was introduced, and a small quantity of high-coloured urine was drawn off. On using the catheter, the right labia was observed to be considerably swollen, and the vagina and uterus were tender to the touch. There was also slight pain on pressure along the course of the saphena vein. The vagina was washed out with hot water, and a poultice was applied to the abdomen and labia. To have a powder containing five grains of Dover's powder and two of calomel immediately, and the same in four hours. The tartar emetic to be continued every two hours. A blister to be applied to the chest.

4.30 P.M.—Complains of great pain on the right side of the abdomen, immediately above the ilium, with considerable tenderness on pressure. She has less uneasiness in the chest, and she breathes more freely, and her cough is less troublesome. Tongue clean; pulse 120, rather sharp. To have the vagina washed out with a decoction of camomile flowers. A mustard poultice to be applied to the abdomen, and the part afterwards to be rubbed with mercurial ointment, and then to have a linseed poultice applied. To have two grains of calomel every four hours, and the solution of tartar emetic every hour.

8.30 P.M.—In a moderate perspiration. Has less pain in the abdomen, which she can allow to be pressed. Pulse 128. To have the vagina washed out with a decoction of poppy-heads. The medicine to be continued.

21st Dec.—As her bowels were much relaxed, she had five grains of Dover's powder early in the morning. In the course of the day she had four grains of calomel in divided doses. She was quite free from pain and cough, and she had passed urine freely. After taking the Dover's powder her bowels were not moved until the evening, when they acted once. To have the abdomen again rubbed with mercurial ointment and the other treatment continued. To have arrowroot for supper.

22d Dec.—Her gums slightly affected with mercury, but has no complaint. Bowels have been four times moved during the night, and she is weak in consequence. To have five grains of Dover's powder and four of gray powder, and arrowroot for diet.

She rapidly improved, and left the hospital in good health on the 31st December.

An Anomalous Case.—Jane Crow, aged 19, a thin, delicate-looking girl, with a very sallow complexion, was delivered of her first child at the full period of gestation on the 1st January, after a comparatively easy labour, the head being in the first position.

On the 3d day after her confinement she had a slight rigor, followed by severe headache, which was relieved after taking a dose of castor-oil. She had no other marked symptom, except that her pulse kept above a hundred, and she spoke in a hurried and unnatural manner. When asked how she was, she always said she was quite well.

On the 10th day she got out of bed and went into the convalescent ward; but she soon became weak, although she made no complaint, and she seemed to have no pain.

On the 12th day her left arm became inflamed above the wrist, and she soon became quite incoherent, and she died on the 14th day. The friends would not allow an examination.

Face Presentation.—Mrs Cochrane, aged 19, a strong, healthy-looking woman, residing in Blackfriars Wynd, was seized with severe pains on the 12th January, and being at the full period of gestation, she was induced to believe that her labour was coming on, and sent for one of the pupils of the Royal Maternity, who, finding that the pains were spurious, left her, with instructions to send for him when the true pains came on. He did not return until the following evening, when the pains were lingering and ineffectual. He, however, remained with her for some hours, and then sent for one of the house-surgeons, under the impression that it was a breech presentation, and that the first stage of labour was completed. But when the house-surgeon arrived he ascertained that the head presented, and that labour had just commenced. The error in diagnosis arose from the womb being much anteverted and the head being felt through its anterior walls, and mistaken for the breech. He gave the patient thirty drops of laudanum, which allayed the spurious pains. True labour-pains did not come on until the evening of the 15th, when it was discovered that it was a face presentation, and the forehead soon became impacted in the arch of the pubes, which was narrow and angular like that of the male.

Such was the state of matters when I arrived, between five and six o'clock on the morning of the 16th. I immediately recommended the application of the forceps; and the patient being put under chloroform and her urine drawn off, the house-surgeon endeavoured to apply them, but without success. I then introduced them, but they slipped—an accident which had never occurred to me before, nor has it ever done so since. It arose from my being thoroughly exhausted from having had a severe and arduous instrumental case only a few hours before, and being at the time suffering from illness. I again introduced the instrument, and after great difficulty delivered the child. The skin under its right ear was lacerated, and did not heal kindly.

Having waited for twenty minutes in hopes that the afterbirth would be expelled, and feeling the womb considerably contracted, I recommended the pupil to examine if it were not in the vagina, when he found it was still in the uterus. After waiting some time longer, I examined and found the os uteri closely contracted round the cord, so that it was impossible to reach the placenta, which was in the uterus. With much difficulty the contraction was at last overcome by gradually insinuating the hand, in the form of a cone, through the os, when the placenta was found adhering throughout its whole extent, and the adhesion was so strong that it was necessary to tear it off piecemeal; and, notwithstanding my utmost efforts, I was obliged to leave a large portion still adhering, which was expelled without hæmorrhage on the fourth day.

The patient did well for twenty-four hours, when rigors came on, and they were soon followed by pain in the abdomen and headache, and the pulse rose to 125. These symptoms continued, along with incontinence of urine, for some days; but they ultimately yielded to the use of five-grain doses of Dover's powder every six hours, and mild aperients; so that in three weeks the patient was able to get out of bed, and soon after resumed her employment of itinerant dancing-girl, travelling about the country with her husband, who acted as her musician. There was slight laceration of the mucous membrane of the vagina, but the perineum remained entire. The child died on the ninth day, the laceration in its neck never having healed.

This case appears to me to be interesting from its unusual complications and the great difficulty there was in delivering the child in consequence of the peculiar deformity of the pelvis. It also shows that in some cases considerable portions of the placenta may be left adherent with impunity; at the same time, this ought never to be done if it can possibly be avoided. In this case it was quite unavoidable from the firm adhesion, which could not be overcome without the risk of injuring the womb. I therefore incurred the risk of hæmorrhage, at the same time instructing the student in charge of the case to watch the patient carefully.

Dr Cochrane remarked, that in cases where there was difficulty in introducing the hand, he found that an opiate was of great use. He had never found it necessary to leave any portions of the placenta in the uterus, during the course of a long practice.

Dr Gordon thought the uterus could be more readily acted on by chloroform, and that the contraction would be overcome more easily by it than by opium.

Dr Thomson said that eighteen months ago he had a very interesting case at the seventh month. The placenta was retained by strong contraction of the uterus. An opiate had been given more than once in the progress of the case. The contraction gave way readily when the patient was put under chloroform. He had several times been so unfortunate as to leave pieces of the placenta in the uterus. He had once met with a case of hour-glass contraction which prevented the placenta being removed for a long time. It was so adherent that it could only be taken away bit by bit. The hæmorrhage was very great.

Dr Gordon said that in some cases it was occasionally necessary to leave portions of the placenta, and quoted the advice of an old Edinburgh teacher: "That we should separate all that was separable."

Professor Simpson thought that in those cases where there was adherent placenta there was less danger than when a portion separated in the womb, for it is still in a vital state whilst adherent.

Dr Burn thought that portions of the placenta which were left in the uterus, and which were not afterwards accounted for, came away when the patient was at stool. He narrated a case of adherent placenta where the patient took phlebitis with protrusion of eyeball, and died. He had also seen cases where no injury resulted from portions of placenta being left.

Dr Bell, in his reply to the observations made on his paper, stated that on post-mortem examination he had found the uterine veins filled with pus.

IV. *Professor Simpson* showed an EPITHELIOMATOUS MASS which had been removed from the cervix uteri of a patient, with the following history, which had been drawn up from the Infirmary journal:—

"H. B., aged 40, was admitted to Ward XIV., Royal Infirmary, 22d May 1871.

"*Previous History.*—Began to menstruate at 15. Married when 19 years old. She has had seven children at various intervals. Has never miscarried. Her labours have always been easy—natural, and at full term. Six weeks after her sixth confinement she suffered from inflammation of kidneys and general anasarca; from this she made a complete recovery within three weeks. With this single exception, she has enjoyed perfect health during all the twenty years of her married life.

"Her last confinement took place on 29th December 1870 (five months ago). She made a perfect recovery, and in a fortnight was able to attend to her ordinary duties.

"About six weeks after, she began to complain of a dragging, uneasy pain in the left side, accompanied by a thin glairy discharge from vagina, having a most disagreeable smell. She presumed she suffered from an attack of 'whites,' and paid no attention. The discharge became, however, much thicker in consistence, and enormously increased in quantity, the smell at the same time being much more offensive. She suffered from constant dyspepsia and vomiting. Occasionally she observed that the discharges from the vagina assumed a brownish colour, and at intervals of ten days she had a sanguineous discharge lasting from one to three days. She consulted Dr Robertson of Bannockburn, who sent her to the Royal Infirmary, to be treated by Professor Simpson.

"*Examination on admission.*—Patient is somewhat over middle height, well made, slightly anæmic. On examination, heart and lungs are found normal, complains of great weakness and constant pain extending from left groin to lower margin of ribs; appetite bad; bowels very constipated. Has nursed her infant regularly. Has a constant muco-purulent, exceedingly offensive discharge from vagina. On digital examination per vaginam, a hard, nodulated, irregular mass was found attached to the cervix uteri, encircling the whole os uteri except at one point, and separate from the roof of the vagina by a narrow margin of healthy mucous membrane. The tumour felt about the size of an orange. Patient complained of much pain during examination. On withdrawing finger it was found covered with blood. On introducing a Sims speculum, vagina is red and congested, covered with a yellow fœtid discharge, and at intervals streaked with blood. Tumour already mentioned is found to be of a bright red colour, irregular surface, small unequal lobules projecting here and there. The introduction of speculum was accompanied by a sanguinary discharge.

"Patient ordered tinct. ferri muriat., and a solution of permanganate of potass to be injected night and morning. Bowels to be acted on freely. Nursing to be discontinued, and extract of belladonna dissolved in glycerine to be applied to the breasts.

"*30th May.*—The milk has entirely disappeared from the breasts.

"To-day, patient being placed in lithotomy position and anæsthetized, Professor Simpson, by means of a wire ecraseur, removed the tumour. There was a smart hæmorrhage, which was at once checked by means of pledgets of lint soaked in a solution of perchloride of iron in glycerine. *Vespere.*—Pulse 100. Patient dozing. Complains of no pain.

"*31st May.*—The plug of lint removed this morning. No hæmorrhage; pulse 95. Took a good breakfast; feels well. Vagina to be syringed with Condy's fluid and water.

"Patient continued to progress favourably until 5th June (seven days after operation).

"*5th June.*—After rising to stool, she had a severe rigor. In evening her pulse 130, full; face flushed; skin hot; much thirst. Has had two attacks of vomiting; complaining of much pain and tenderness over abdomen. Is unable to pass urine, which had to be drawn off with a catheter. Ordered ¼ gr. morphia every three hours; turpentine enema and turpentine stupes over abdomen.

"*6th June.*—Pulse 140; pains over abdomen still acute. Abdomen to be blistered with liquor vesicatorius; morphia pills to be continued. Can pass water without catheter. *Vespere.*—Pain somewhat less over abdomen; pulse 120. Has slept for three hours; feels much refreshed, and easier.

"*7th June.*—Pulse 98; pain in abdomen much relieved; passed a good night."

Dr Simpson examined the patient to-day, 14th June, fifteen days after the operation, and found the surface of the wound granulating. As there were some suspiciously prominent points scattered through it, he had brushed it freely with solution of perchloride of iron. Her general condition was decidedly improved, and the arrest of the discharge from the fungating mass, even though it might prove to be but temporary, he regarded as an immediately beneficial result of the operation. In such cases he had frequently removed portions of cancroid tumours from the cervix uteri, where he knew that the whole affected portion of the organ could not be extirpated, with the happy result of arresting for a time the progress of the disease and checking the exhausting discharges, which must otherwise have speedily dstroyed the patient's health. Sir James Simpson used occasionally to dig out with his nail the cancerous masses in some of the excavating forms of malignant disease of the cervix uteri; and Professor Simon had recently written a paper relating some interesting cases where he had followed a corresponding practice of digging out the morbid deposits with a scoop or curette. The result was that a healthy granulating sore was substituted for a bleeding cancerous surface; and though the disease returned eventually, yet the benefit for the time to the patient's health was very marked, and her life was prolonged perhaps for months.

Dr Thomson thought the removal of such a mass must be very important, and fully warranted, as making the patient more comfortable even for a time. In a recent case of cauliflower excrescence which he had seen, it was too late to remove the whole, but by picking away portions by the nail, and applying perchloride of iron, the hæmorrhage, which previously had been great, was stopped even till time of death.

Dr Gordon submitted that his instrument for rupturing the membrane, if modified at the point, would be better suited to remove portions of tumour than the nail.

Dr Burn said Sir James Simpson had a small instrument which he used for scooping off portions when removal of the tumour could not be effected. When the hæmorrhage was from vegetations he had frequently scraped them off with success.

Drs Gordon and *Young* alluded to the wire Dr Simpson used.

Dr Young thought it merely would cut through and not bruise so much as the chain, and so cause more bleeding.

Dr Simpson replied.

Part Fourth.

PERISCOPE.

THE following is an abstract of a lecture delivered by M. Verneuil on the subject of the first services to be rendered to the wounded:—

This lecture is specially addressed to the young surgeons employed on the ramparts, in the immediate vicinity of the fighting. Their position is a very difficult one, as the cases will be new to them, as gunshot wounds are so rare in civil practice. Destitute of experience, deprived of the counsel of their teachers, without leisure for reflection or for reading, they will doubtless be in difficulty without some programme for their guidance. We wish to tell them what they should do and what they should leave undone.

Two chief classes of injury will come under your notice. 1. Wounds usual in daily hospital work—such as fractures, bruises, dislocations, wounds with knives, swords, and bayonets. 2. Gunshot wounds. These are less familiar, and it is of the nature and special characters of these that I wish to speak. They resemble contused wounds, but with exaggeration of all the injuries—extensive bruising of the tissues, complicated fracturing of the bones, tearing and crushing of the soft parts; sections with loss of substance, of nerves, and vessels; large openings into visceral or articular cavities; injuries, often hardly visible on the surface, but extensive and irreparable in the deep parts; foreign bodies are present, bullets, splinters, fragments of clothes, etc. The surfaces of such wounds are unfit for immediate union; without being poisoned, as used to be believed, they are almost inevitably destined to excessive inflammation, suppuration, and will heal only after the separation of extensive sloughs. Five different divisions will easily be recognised under which these wounds may be classed.

1. Gunshot wounds affecting the soft parts only. 2. Wounds with fractures of bones. 3. With foreign bodies. 4. Complicated by hæmorrhage. 5. With much injury to parts, large loss of susbtance, and complete or partial separation of a limb.

Before examining the rules to be observed in treating each ot these, let us examine the resources we have at command. These are limited, and your economy and ingenuity will be required to supply deficiencies. You will have to do much with little—to utilize everything that comes to hand. It is your duty to perform the first services to the wounded—to apply the first, but only temporary, dressings to protect the wound—to support the fracture, to calm suffering, and to prevent immediate complications—in a word, to facilitate transport to the rear and to the hospitals, where the principal operations will be performed. These operations you must not perform, for the following reasons: 1. Because they are difficult, and, for the most part, require a skill which you do not possess. 2. Because they are tedious; and you must keep the wounded at the front as short a time as possible. 3. Because great amputations should not be done at once, but postponed to the moment when the first shock is being followed by reaction. 4. Because the determining whether to save the limb, amputate or excise a joint, demands careful examination and much experience. Do not, then, be tempted to operate. To return to the first dressing:—charpie, linen bandages, and splints are needed. Husband the charpie; when it is done, use carded cotton, without regarding the prejudice that cotton is hurtful to recent wounds. When cotton fails, cover the wound with plaster, or even with fresh leaves—indeed with whatever you can get that is least irritating. For compresses, when they fail you, use the patient's clothes, shirt, etc.—indeed, anything soft and pliable that you can get. To fix the dressings you have bandages; when they are exhausted, tear up napkins, shirts, even coats—specially use handkerchiefs. Folded in triangle, in square, in a rope, the handkerchief will do for compress, bandage, or sling; and if you practise yourselves in their use, as taught by Mayor, Rigal, and more recently by Esmarch—for whom, though in the ranks of our enemies, I retain every respect and friendship—you will find their value. You will need to put up fractures; but you will have no splints, no bandages of Scultetus, no dextrine, no plaster—nothing but pads and pillows. You will require to improvise everything—napkins, pads, splints of straw rolled up to the thickness of the wrist: handkerchiefs and slings will suffice for most fractures of the upper extremity.

If you are destitute of bandages, you may fear that you will be still more destitute of medicines and topical applications. I may reassure you on this point. The best of all topical applications for recent wounds is, fortunately, always at your service—I mean cold water; you need neither wax nor ointments. I will again speak to you of hæmostatics, and of medicine which may be given internally; but I repeat, that pure cold water, in recent wounds, is the best of all local applications.

You will apply your first dressings as far as possible in the places arranged for the purpose. When several wounded come in at once, you must make a selection. The less seriously injured must sit down or lie on straw arranged for the purpose. The more seriously injured should be placed on beds, and obtain your first attention. In cases where the dressing may have to be tedious or painful—or if a small operation or ligature of a vessel is necessary—you will place the patient on the operating-table. Wherever the situation will allow it, you will place the operating-table in a sheltered or isolated spot, in order that those already dressed, or those waiting their turn, may not see your work nor hear the cries of their comrades. As far as possible, get rid of the traces of one dressing before beginning another—such as blood, soiled linen, clothes, limbs, etc. In a word, attend to the *morale* of your patients. Occasionally you will have to dress the patient on the rampart itself, when it may happen to be far from your post. In such a case, you must place the patient in as comfortable a position as possible, seated or recumbent, making use of any inequalities of the ground, and improvising a couch if possible.

You will have to work by night as well as by day—in wind and rain as well as in sunshine. You will take great care to preserve the wounded if possible from long exposure to cold—covering as quickly as possible the part you have stripped for the dressing.

With these general rules, let us go on to the treatment of special injuries.

1. *Simple contusions.*—Cold applications, with a gently supporting bandage. Fix the limb if movement is painful.

2. *Simple fractures.*—Immediate reduction, and application of suitable retentive apparatus.

3. *Dislocations.*—Attempt immediate reduction, which is generally easy, then fix the limb.

4. *Incised wounds.*—Simple bandages; if they are narrow and superficial, reunion by plasters; aided by position of the limb, if they are deep or gaping. Do not attempt too careful union, as movement will destroy it; specially be sparing of stitches. These can be better managed at the rear. Remember that union by first intention succeeds better some hours after than at first.

5. *Gunshot wounds of soft parts only.*—These are often simple enough, at least for a time. Cover them with a simple dressing, making no attempt to close them. Avoid all examination for diagnostic purposes; do not put in probe or sound, not even the finger. If the opening is single, the ball is probably still in the wound. Do not try to be certain, you will only cause pain and lose time.

6. *Gunshot wounds with injury to bones.*—Treatment depends on the bone injured. If it is cranium, or face, or spine, or sternum, ribs, or pelvis, you can do nothing beyond applying a simple bandage. If a limb is injured, you can do more; you will endeavour studiously to fix the limb and prevent movement.

7. *Gunshot wounds with foreign bodies.*—Such cases are common. The ball has gone through, but left pieces of cloth, of bone, etc., in the wound, which are evidently hurtful if they remain. But remember that their extraction is always laborious, and rarely required at once. I advise you to be cautious in attempting it. Before applying the first dressing, remove all fragments that are distinctly visible and accessible. If you see a ball just under the skin, cut down on it and remove it. But except in very simple cases let them alone. To extract deeply-seated foreign bodies, operations are necessary which require experience and suitable apparatus. It is less dangerous to leave a foreign body in a few hours longer, than to make unsuccessful attempts at its extraction. I formally

forbid you to make any attempt to extract balls from cranium, chest, or abdomen.

8. *Gunshot wounds with hæmorrhage.*—Here I must change my language, and advise you, on the other hand, to interfere promptly, energetically, and radically. Hæmorrhage is one of the most common causes of sudden death on the field. It used to be thought that bullets respected large vessels. This is an error. The greater the danger is, so much the more must you be prepared to meet it. Cases vary. You may find a hæmorrhage spontaneously arrested by fainting; but you may learn its existence by the pale, feeble patient, the miserable, thready pulse, and blood on clothes and ground. Be ready for its recurrence; take every precaution in raising, dressing, and removing the patient. Have a compress on the wound and on the suspected vessel. Sometimes you must proceed to arrest the bleeding at once, specially if the blood is flowing at your examination. Whenever you have access to the bleeding spot, put on a ligature, however small the vessel may be. If the oozing is slight, if it comes from a deep or an unknown source, fill the bullet track with charpie. Cover the orifice with compresses, and secure everything with bandages, pretty tightly applied, and soaked in cold water. If the hæmorrhage is severe, and from an unknown vessel, check it by digital compression of the wound, by the hands of intelligent assistants. Use the respite to compress above the wounded spot by a tourniquet, and then tie the vessel in the wound, if possible, or if not at a suitable distance above. To reach the vessel incisions will be necessary. If at the wound, tie the vessel above and below; and remember the ends of the vessel, if divided, may be distant from each other. To tie an artery is often difficult; it will need all your thought, care, and anatomical knowledge; and all your efforts may be vain, if a great vessel is wounded high up, or in one of the cavities. I cannot leave this subject without cautioning you against a dangerous practice, too often used. We often see wounds which have been stuffed with charpie soaked in perchloride of iron. This agent absolutely prevents immediate union, sets up severe inflammation, and quite prevents future ligature. It may be useful in secondary hæmorrhages from small vessels, but is so hurtful to fresh wounds, that I absolutely forbid it. Its use is always questionable. If the vessel is large, it is useless; if it is small, cold, compression, any other agent, is equally successful and less dangerous. I hope you will not commit the error of soaking wounds with this detestable drug. You will find other less dangerous applications at your service, such as pure alcohol, Pagliaris styptic, etc. These I do not recommend, but I condemn them less energetically. They are useful in cases where bloody oozing escapes from small vessels in a large wound.

9. *Extensive laceration, bruising, or separation of limbs.*—Cannon-balls, large bullets, shells, explosions of mines, cause accidents only

to be compared to steamboat or railway explosions and collisions. If the great cavities are opened, death rapidly occurs. In such cases you may use chloroform to soothe agonies. If a limb is adhering only to a morsel of skin or flesh, you may separate it. Amputation must be performed, but the patient is not yet fit to bear it. Content yourselves by tying the great vessels on the surface of the irregular flap, cover the flap with a dressing, and send the patient to hospital.

Here I stop, though with regret, and if you appreciate what I have said, you will manage satisfactorily the first and necessary dressings. But you will need to attend to the general condition as well as to the wounds of the patient. Fatigue, hunger, pain, terror, will demand internal remedies, such as soups, wine, pure or mixed, and cordials. Those who suffer, who cannot sleep, or who are excited, will need opium; five or six drops of laudanum or wine of opium will calm them. Repeat the dose in an hour. If you find your patient intoxicated, as is not uncommon, you will give an emetic, and then give ether or hot soup, if you can procure it.

Gentlemen, I have told you your duties, and am convinced that you will surpass my expectations, and fulfil your duties with zeal, devotion, intelligence, and punctuality. We shall expect in you that personal courage in which Frenchmen are never deficient. Your posts are dangerous; you will partake the perils of the combatants. You will practise humanity in its fullest sense; you will, perhaps, have to assist enemies as well as friends. If you were armed you would fight without pity; but as surgeons you must know no hatred for him who has fallen, and has a right to your compassion. You must also show brotherly kindness to each other, and the discipline which knows obedience to law and to those in power.

On all these points I am full of confidence in you. Parisians, in fact or of necessity, you will show to all that the children of the great town, who are called careless and frivolous in peace, are brave in danger, strong in misfortune, and indomitable in the performance of those duties which the welfare of their country demands.—*Gazette des Hôpitaux*, No. 122, 1870.

ON THE ANTAGONISM BETWEEN THE ACTIONS OF PHYSOSTIGMA AND ATROPIA.—The subject of the antagonistic action of poisons has been most instructively handled by Dr Thomas R. Fraser, in connexion with the two drugs referred to, in a paper read before the Royal Society of Edinburgh, and published in their Proceedings. In this paper, to which we refer for details, he conclusively proves, that while there is a successful antagonism between the two poisonous drugs referred to, this antagonism is limited. To determine this accurately, "a large number of experiments were made, by which the region of the successful antagonism of fatal doses of physostigma has been defined with considerable exactness. The smallest and the largest doses of atropia that are able to prevent death after the administration of different fatal doses of physostigma, and the maximum fatal dose of physostigma that is capable of being rendered non-fatal by atropia, were ascertained, and it was found that beyond these various points death may be produced by combined doses of the two substances, either by some non-antagonized action belonging to one or other of them, or by a combination of similar actions belonging to both. . . .

"In one portion of this investigation, experiments were performed in which physostigma was given five minutes after atropia, both substances being injected under the skin. In the first series, the dose of physostigma was the minimum fatal, and the doses of atropia ranged from one that was too small to prevent the lethal action of this dose of physostigma, through a number of gradually increasing doses of atropia that were able to prevent death, until a dose was found whose administration resulted in death. Similar series of experiments were made with doses of physostigma one and a half times, twice, two and a half times, thrice, and three and a half times as large as the minimum fatal. With the minimum fatal dose of physostigma it was found that, while ·01 grain of atropia is too small to prevent death, ·015 grain is able to do so; and that, with any dose ranging from ·015 grain to 5·2 grains the lethal effect of this dose of physostigma may be prevented; while if the dose of atropia be 5·3 grains or more, the region of successful antagonism is left, and death occurs. With one and a half times the minimum fatal dose of physostigma, successful antagonism was produced with doses of atropia ranging from ·02 grain to 4·2 grains; with twice the minimum fatal of physostigma, with doses of atropia ranging from ·025 grain to 3·2 grains; with two and a half times the minimum fatal of physostigma, with doses of atropia ranging from ·035 grain to 2·2 grains; with thrice the minimum fatal of physostigma, with doses of atropia ranging from ·06 grain to 1·2 grain; and with three and a half times the minimum fatal dose of physostigma, with doses of atropia ranging from ·1 grain to ·2 grain. Successful antagonism could not be obtained above this dose, and, accordingly, three and a half times the minimum fatal dose of physostigma would appear to be about the largest quantity whose lethal action may be prevented by administering atropia five minutes previously.

"A similar series of experiments has been made, in which physostigma was administered five minutes before atropia, and the results were essentially the same, excepting that the region of successful antagonism was found to be more limited. . . .

"After defining the superficial area and the thickness of the region of successful antagonism, it seemed of interest to ascertain what dose of atropia is required to produce death with a dose of physostigma below the minimum fatal. The experiments performed for this purpose show that when one-half of the minimum fatal dose of physostigma is given five minutes after atropia, so large a dose of the latter substance as 9·8 grains is required in order to cause death—recovery taking place with doses ranging from 3 to 9·5 grains.

"The minimum fatal dose of sulphate of atropia given alone was found to be twenty-one grains for a rabbit weighing three pounds. It is, therefore, remarkable that the $\frac{8}{100}$ths of a grain can prevent a dose of physostigma, equal to the minimum fatal, from causing death, and that the $\frac{1}{10}$th of a grain is capable of rendering non-fatal a dose of physostigma, equal to three and a half times the minimum fatal.

"Excepting dilatation of the pupils, these minute doses of atropia, and indeed any dose capable of antagonizing the lethal action of physostigma, are unable to produce any symptom recognisable by a mere inspection of the animal. Still, they undoubtedly produce energetic physiological effects—effects, however, which it is unnecessary to describe in this brief abstract. It is sufficient to point out that the notion, which exists in many quarters, that rabbits can scarcely be affected by atropia, is an erroneous one."

These interesting and remarkable experiments, while confirming previous theories as to the antagonistic action of poisons, show how loosely these theories have been constructed, and how much careful work is required before any practical advantage can be profitably taken of this most interesting phenomenon.

Part Fifth.

MEDICAL NEWS.

Meeting of the General Medical Council.—The fourteenth session of this Council was opened at two P.M., on Tuesday, 4th July, at 32 Soho Square—the President, Dr Paget, in the chair. Besides the President there were present Drs Bennett, Acland, Humphry, Embleton, Storrar, Alexander Wood, Andrew Wood, Fleming, Macrobin, Thomson, A. Smith, Leet, Apjohn, Sharpey, Parkes, Quain, Christison, Stokes, Gull, and Francis Hawkins (registrar), Mr Hargrave, and Sir Dominic Corrigan. Mr Cooper was prevented by indisposition from attending the first meeting. The President delivered his annual address, in which he complimented the retiring members, Dr Rumsey and Mr Cæsar Hawkins, on the able and conscientious services they had rendered to the Medical Council in the interest of the general public. He then expressed regret at the withdrawal of the Lord President's Medical Amendment Bill of last session, stating that though this Bill proposed to deprive both universities and medical corporations of their ancient privilege of granting licenses to practise, yet, after due consideration, it had been approved by the Medical Council b majority of fifteen to three, and that this ought to be a sufficient answer to those who accused the Medical Council of caring more for the interests of medical corporations than for those of the public. He then expressed a hope that though the two Medical Bills introduced into Parliament this session by private members had to be withdrawn, they would yet have had a good effect in diffusing information in regard to the state of the medical profession among the general public, who were so profoundly ignorant of this matter which so intimately concerned themselves. He concluded by detailing the business about to be brought before the Council, and suggesting what he thought would be the best mode of conducting that business. Committees were then appointed on the following subjects:—Business, Finance, and the Registrations of Medical Students, and the Returns from the Bodies in Schedule (A) of Professional Examinations and their Results.

Then followed a discussion on the returns from the Medical Department of the Army, and the Military Department of the Indian Office, which it was complained were calculated to mislead, and had misled the public as to the number of the candidates who had failed to satisfy the examiners. This arose from all those who had merely failed to obtain commissions not being sufficiently distinguished from those who had failed altogether to satisfy the examiners—two very different things; yet this important distinction was not embodied in the statement, but merely noticed in a small type note. These returns were, therefore, unjust to other Examining Bodies, and so much the more so that they were often regarded by the public as a test of the value of the examinations of other Examining Bodies in the country; and though this idea was conclusively shown by Dr Alexander Wood to be erroneous, as he instanced a case in which a candidate rejected by the board which he represented had been, a few days afterwards, accepted by the Army and Navy Medical Board, when he had the cool assurance to write to the secretary of the Board, by whom he had been rejected, to say he now hoped there would be no objection to give him his diploma; yet the feeling of the Council being against the present form of these returns, Dr Alexander Wood's motion to refer them to a committee to report was agreed to.

Last session's Bill, The List of Examining Bodies, The Report of the Committee on Professional Examinations, The Removal of certain Names from the Register, Another Petition from Dr Pattison, and the subject of Colonial Certificates in connexion with a Petition for recognition from the Board of Public Examiners at the Cape of Good Hope, were then considered and disposed of. On the second day, Mr William Kempster was charged with having rendered himself liable to erasure from the Register, for having allowed a Mr Goodson, an unqualified practitioner, to practise under colour of his name, and for having signed certificates of the death of patients whom he had not personally seen. The defence was that Mr Goodson was Mr Kempster's assistant; it was accepted, and Mr Kempster was unanimously acquitted. In connexion with this case, Sir Dominic Corrigan moved that an amendment of the laws in regard to death registry was urgently required, which was unanimously agreed to. On the third day, Dr Parkes's resolutions in regard to the Report on Professional Education were considered, when it was agreed, that the instruction in pharmacy should be separated from that in therapeutics, and the former should be obtained at an early period, and the latter at a later period of the professional curriculum; that the professional instruction in midwifery should be extended, and that every candidate for a license should be required to attend not less than twenty labours; that it is desirable that systematic instruction in pathological anatomy should form part of the professional curriculum; that it is desirable that class examinations should form a necessary part of class instruction. On the fourth day, Dr Bennett made a statement as to a conjoint Examining Board for England, which was not discussed. A motion by Dr Fleming to make clinical instruction in medicine and surgery more practical than at present, and to limit the size of the classes, was negatived. A motion by Dr Storrar to give students the option of acquiring their knowledge of chemistry, and of passing their examination on that subject, before commencing their professional curriculum, was also negatived. Dr Parkes then moved that a letter should be addressed to all the licensing bodies, urging that arrangements for the formation of conjoint examining bodies should be undertaken without delay, and should be communicated to the President of this Council before the close of the present year. This was agreed to by all, except Sir Dominic Corrigan, who dissented. Dr Parkes then moved, that the universities and medical corporations established in each division of the United Kingdom should be requested to concert a scheme for the constitution and regulation of a conjoint examining board for that part of the kingdom to which they belong, and to transmit such scheme to the consideration of the General Medical Council; which was agreed to. Dr Andrew Wood then moved, that the report on medical education be recommitted and brought up next day in a form adapted to the resolutions of the Council; which was carried. On the fifth day, the name of Mr Frederick Henry Morris was directed to be removed from the Register. Certificates from the Board of Examiners in Literature and Science at the Cape of Good Hope, were agreed to be recognised. Drs Bennett, Acland, Sharpey, Quain, Andrew Wood, and Aquilla Smith were elected by ballot members of the executive committee. A motion by Dr Bennett, that it be referred to the executive committee to report on the most desirable mode of procedure in the case of motions having reference to penal procedures, was carried. A report from the Committee on the Returns from the Army and Indian Medical Boards, including draft letters to the secretaries of the several boards, proposing a new and better arrangement of the details of the examination, was agreed to, and the letters directed to be forwarded. The report of the Finance Committee, showing a balance in favour of the Council, was then received and agreed to. After which Dr Sharpey resigned his treasurership, and received the thanks of the Council for his long and valuable services; and Dr Bennett was appointed his successor. The report of the Pharmacopœia Committee was then received, and its members reappointed, their names being Drs Christison, Quain, Sharpey, and Aquilla Smith. On the motion of Dr Alexander Wood, a committee, consisting of Dr Alexander Wood (chairman), Dr Humphry, Dr Thomson, Mr Quain, Dr A. Smith, Dr Sharpey, and Dr Storrar, was appointed to report on the scheme of visitation of the preliminary and professional examination of the licensing boards. On the sixth day, the amended report of the Committee on Professional Education, embodying the resolutions agreed to, was read and accepted. In regard to the matter of conjoint examining boards, it was moved by Dr Bennett, that a meeting of the General Medical Council be held early in 1872, to receive the proposals of the bodies for conjoint examinations, and to consider whether any, and what, steps should be taken to carry out the resolutions of the Council in favour of such combinations; and this was carried. The report of the Committee on the Registration of Medical Students was then received, and postponed to the next meeting of Council. After some formal business, the thanks of the Council were then awarded to Dr Andrew Wood for his services as Chairman of the Business Committee of the Council during its present session, and to Dr Paget for his efficient services as Chairman of the Council during its present session. The proceedings then terminated.

FORFARSHIRE MEDICAL ASSOCIATION.—The thirteenth annual meeting of the Forfarshire Medical Association was held in the Town Council Room of Montrose on 13th ult., at twelve o'clock noon. Present—Dr Johnston, Kair House, President (in the chair); Drs Lawrence, Officer, Howden, and Watson, Montrose; Simpson, Marykirk; Ironside, Laurencekirk; M'Rae, Fettercairn; Mackie, sen., Brechin; A. Lawrence, Kirriemuir; Grant, Glamis; Crockatt, Pirie, Campbell, and Duncan, Dundee; D. Arrott and Dewar, Arbroath; Todd, Friockheim; and Professor Inglis, Aberdeen. Mr Annandale, Edinburgh, was present as guest.

The minutes of last annual meeting and subsequent meetings of Council were read and approved of; as were also the Treasurer's accounts.

The following gentlemen were then, on the motion of Dr D. Arrott, unanimously elected office-bearers for the ensuing year:—*President*, Dr Mackie, jun., Brechin; *Vice-Presidents*, J. Henderson, Esq., Auchinblae, Matthew Nimmo, Esq., Dundee; *Hon. Secretary*, Dr Duncan, Dundee; *Hon. Treasurer*, Dr Campbell, Dundee; *Council*, Drs Arrott, Lyell, Christie, Crockatt, Begg, and Pirie; *Local Secretaries*, as formerly.

It was remitted to the Council to watch the progress of any medical bill which might be introduced into Parliament next session, and to take such steps regarding it as might be considered necessary.

Dr Johnston then read a paper "On Amputation of the Penis, with Cases," which will appear in our next number; this was followed by a paper from Dr M'Rae "On Chloral." A good deal of interesting discussion on both papers followed, in which many of the members present took part. A wish was expressed that they should be published, and votes of thanks unanimously awarded to the authors.

Professor Inglis then gave the details of an interesting case which had recently occurred in his practice, illustrated by a specimen. He received the thanks of the meeting for having brought it forward. This concluded the business.

The members afterwards met to dinner in the Star Hotel at three P.M.,—there being present, in addition to those at the meeting, Professor Ogston, Aberdeen, as a guest; Drs Steele, H. Steele, and Key, Montrose; Mackie, jun., and Thomson, Brechin; Alexander, Forfar; and Arrott and Begg, Dundee. Dr Johnston, President, in the chair, being supported right and left by Professor Ogston, Aberdeen, and Mr Annandale, Edinburgh. Dr Lawrence, Montrose, one of the Vice-Presidents, acted as croupier; having right and left, Professor Inglis, Aberdeen, and Dr Arrott, Dundee.

ON THE USE OF CARBOLIC ACID TO PREVENT PITTING AFTER SMALLPOX.

To the Editor of the Edinburgh Medical Journal.

SIR,—Having experienced the beneficial effects of carbolic acid in preventing disfiguration of the face in severe cases of burning with gunpowder and with sulphuric acid, I suggested its employment, with this object, in a number of cases of smallpox admitted to the Dumfries Infirmary in March and April last.

It was applied in the following manner:—From the first appearance of the eruption, until the completion of desquamation, the face was kept constantly moist with the solution of the acid in olive-oil (1 to 8). The results, I am happy to say, have been most satisfactory. Drs Murray and Kerr, the physicians to the Infirmary, inform me, that of all the cases so treated (several of which were of the confluent type), not one has presented, on recovery, the slightest trace of disfiguration. The application, moreover, was most grateful to the patient's feelings, allaying the itching and irritation, and preventing the desire to scratch off the scabs, which is so annoying to the sufferers in the later stage of the disease.

In the case of gunpowder burning, the acid, in addition to its antiseptic and anæsthetic properties, appears to have the effect of suspending the carbon in solution, and withdrawing it from the skin. In a case which I treated about twelve months ago, on the method above described, the patient, a young gentleman, was so disfigured as to present the appearance of a negro, his face being blackened, his lips swollen and everted, eyelids closed, hair and beard much singed, intense intolerance of light, and profuse lachrymation, with great suffering. The application of the carbolic acid and oil was followed by instant relief, and the oil, becoming more fluid from the heat of the skin, ran over the chin with the appearance of thick ink. The result of this treatment was, that on recovery, which was rapid, there was not the slightest discoloration of the skin, and the face, in a very short time, presented its natural appearance.

Trusting that such of your readers as may have cases of smallpox under their care, may be induced by the above considerations to give this method of treatment a fair trial,—I am, Sir, yours, etc.,

W. SCOTT, M.D.,

17th July 1871. *Surgeon to the Dumfries Infirmary.*

PRESENTATION.—Dr Johnston of Montrose has been presented, on his retirement from practice, with a very handsome silver dessert service by the numerous friends and patients whose love and esteem he had secured during the long period of thirty-five years, which he had spent in that town in the exercise of his profession. Dr Johnston was entertained at a banquet, on the occasion of the presentation, by a very large and influential assemblage of his fellow-citizens.

OBITUARY.—We regret to have to announce the death of Thomas Hawkes Tanner, M.D. St And., F.L.S., M.R.C.P., at the early age of forty-six. The author of one of the most concise and practical works of Practice of Medicine, which in every edition—and it has gone through six—was always abreast of the science of the day, few men have been more widely known, or more highly respected. He died at Brighton, on the 7th ult., of uræmic convulsions, the result of chronic albuminuria.

PUBLICATIONS RECEIVED.

Braithwaite's Retrospect of Medicine, Jan. to June. London, 1871.

J. H. Balfour Browne,—Medical Jurisprudence of Insanity. London, 1871.

Austin Flint, jun., M.D.,—Physiological Effects of Severe and Protracted Muscular Exercise. New York, 1871.

William A. Hammond, M.D.,—Treatise on Diseases of the Nervous System. New York, 1871.

Edward Henderson, M.D.,—Report on Prostitution in Shanghai. Shanghai, 1871.

Wharton P. Hood, M.D.,—On Bone-setting. London, 1871.

R. Whitfield Hewlett, M.D.,—The Baths of Bormio. St Moritz as a Health Resort. London, 1871.

Andrew Legat, M.D.,—History of the Smallpox Epidemic in South Shields, 1871. South Shields, 1871.

Morell Mackenzie, M.D.,—Essay on Growths in the Larynx. London, 1871.

W. D. Stone,—Half-Yearly Abstract of the Medical Sciences, Jan. to June. London, 1871.

Rapport sur l'Ambulance de l'Ambassade d'Autriche-Hongrie à Paris. Versailles, 1871.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Ovaritis*. By J. MATTHEWS DUNCAN, M.D.

THERE are some grounds for the rational expectation that the pathological history of the ovary will, in its course, follow that of its physiological history. For a very long time the womb was regarded as the chief and central organ in the healthy female genital system. It has been dethroned, and, in the meantime at least, the ovary holds the first place without dispute. The uterus is merely the nest, or organ of pregnancy. In pathological importance, I believe I am not wrong in saying that the uterus is still regarded as pre-eminent, and to this, its claims appear to me to be at least doubtful.

The delay of the professional recognition of the pathological importance of the ovary is easily accounted for. Its normal structure, even, is not yet generally known. Recent text-books of anatomy speak of its peritoneal coat; recent text-books of gynæcology speak of inflammation of its peritoneal coat; while there can be no doubt that it has no peritoneal coat at all. Not only are several such errors prevalent, but, further, the organ lies deeply, and has been generally, and is extensively, regarded as being beyond the reach of the ordinary means of physical diagnosis. These means are known to be available when it is enormously enlarged, as in ovarian dropsy or ovarian cancer. Few physicians know that the simple inflammation of the organ is within the scope of physical diagnosis, and fewer still practise this method. It requires for its successful adoption a careful education. So long as mere symptoms were trusted to in the vainly attempted diagnosis of ovarian inflammation, there could be no hope of differentiating it from other pelvic inflammations; and, consequently, the uterus, having in the professional mind established a prior claim, got all the credit or discredit of those ovarian inflammations, from which without physical diagnosis uterine inflammation was not distinguished, and was not satisfactorily distinguishable. Again, recent views, strongly held and widely disseminated, as to the pathological importance of the cervix uteri, arising from its liability to inflammation and ulceration, have given the uterus a renewed firmness of tenure of its exaggerated pathological pre-eminence, and the fortunate decadence of this once warmly fostered source of pre-eminence forms a favourable opportunity for asserting the claims of the ovary. Doing this in one limited pathological department, I carefully abstain from every appearance of wishing to establish for the inflammation of the ovary any such hypothetical and spuriously scientific paramount position as from various causes the corresponding disease of the neck of thewomb has in recent times obtained.

Ovaritis is a common disease, but I am sorry I cannot give any good idea of its frequency. This arises partly from the circumstance that, in the advanced stage of the disease, it is often impossible then to diagnose it, on account of its distinctive characters being obscured by adhesions or by perimetric (or more properly perioophoric) abscess. Besides this difficulty there is frequently another; namely, to decide, in cases where there is inflammation of both parts, whether the ovaritis or the metritis is the original and chief disease.

In a special small series of unselected cases that have come under my care, I find that while there are 23 cases of inflammation or ulceration of the neck of the womb, there are 12 cases of ovaritis; but this rough statement is not of much value. I have tried to make the comparison with a well-known common disease, for obvious reasons.

Ovaritis is frequently described as being of three kinds—1. Parenchymatous; 2. Follicular; 3. Peritoneal. This division has a strong resemblance to the analogous separation of pulmonic inflammations—1. Pneumonia; 2. Bronchitis; 3. Pleurisy; and perhaps I am not far wrong in supposing that a wish to equal in precision the pulmonary physician has been more truly the parent of this classification of ovarian inflammations into three kinds than any sound pathological basis. Certainly, speaking from a practical point of view, I cannot as yet see my way to any real distinction between the parenchymatous and the follicular disease. The peritoneal form is of course out of the question, yet perioophoritis, or inflammation of adjacent peritoneal membrane, is certainly common; but even this I cannot regard as meriting a distinct pathological place.

Ovaritis is divided into acute and chronic. The acute form is, as its name implies, rapid in its progress; and it may end simply by resolution; or its end may be complicated by perioophoric adhesions or abscess, or true ovarian abscess; or it may end in the chronic form of the disease. Chronic ovaritis justifies its special designation, by its tendency to run a tedious course, lasting as it often does for many years. It may go on for any length of time without the organ becoming fixed by adhesions, and without suppuration in its substance or in its immediate neighbourhood. It is this chronic character which renders this common disease one of the most important diseases of females.

One ovary only may be affected, or both. Sometimes, especially I think in the slighter cases, the disease affects and adheres to one ovary, but it is common to observe the disease to affect the right and left organs alternately, and this alternation may give a peculiar character to a case.

I have an impression, in accordance with common belief, that the left ovary is more frequently the seat of the disease than the right; but I am not sure of this. Among the cases already referred to, I find the left ovary named nine times, the right three times. Besides, however, I have frequently observed both ovaries affected.

The organ may be variously enlarged by inflammation; and several authors appear to me to have estimated the possible amount of enlargement at too small an amount. I have certainly observed it enlarged to many times its healthy bulk, and to at least three times its ordinary dimensions. In one of the most characteristic and perfectly-watched cases that I have seen, both ovaries were enlarged, globular or oval in shape, and well filled the posterior half of the brim of the pelvis, being in contact with one another at their internal surfaces: conditions implying an enlargement not less than that of a hen's egg; and, on post-mortem examination, I have seen this size closely approximated.

Ovaritis is a disease upon which morbid anatomy has thrown almost no light, and for the very simple reason, that it is rarely fatal. Morbid anatomists describe hypertrophy of stroma, congestion, abscess, inflammation of Graafian follicles, dropsy and abscess of the same, abscess of the stroma, cirrhotic atrophy of the whole gland, and, in cases of pyæmia, suppuration of the entire organ, and its change into a putrilaginous-like mass. Into this last condition I have no wish at present even to inquire, as it is only observed under the circumstances already referred to, and in regard to which I am not now discoursing. The other changes, including even abscess of the stroma, are not brought into contact with practice. The conditions which alone are at present cognisable by the practitioner are sensitiveness, tenderness, degrees of hardness, enlargement, and roughness of surface, and changes of position. Changes in these conditions, even when collated with changes in symptoms, cannot be made to indicate any change such as is recognised by morbid anatomy. Adhesions of and abscess around the ovary—perioophoric abscess—are often discovered by the morbid anatomist, and their occurrence is frequently diagnosed during life.

Ovaritis is frequently caused by the conditions of recent marriage; it may be produced by suppression of the menses from cold or other causes; it is often observed as a consequence of gonorrhœa; it occurs frequently during convalescence from abortion. That it is not frequently observed after delivery in advanced pregnancy is not good evidence that it does not often occur then, and I see no reason why it should not often occur then as it certainly does after abortion. Yet the fact remains, that it is less common after delivery at the full time than after abortion. It is observed frequently after operations on the uterus, such as metrotomy and other dilatation of the cervix; besides, it is frequently found in cases where no evident cause can be assigned for it.

When ovaritis occurs the patient suffers pain, and has the concomitant phenomena of what is called inflammatory fever in various degrees, just as in any other inflammatory affection. The pyrexia has no special charac'ers, and the characters of the pain are extremely indefinite. It may be slight or severe; it may be acute or dull; it may be situated in the region of the ovary, or be referred to the groin or to the back, near, but not in the base of, the sacrum; it may extend down the thighs. I know no other symptom or characteristic peculiarity of pain worthy of mention. In short, our present knowledge of the symptoms of this affection does not carry us far. I find authors describing hysterical attacks, frequent calls to make water, constipation, painful defecation, difficulty in maintaining the erect position, pain following the extension of the lower limb on the affected side, pain accompanying decubitus on the healthy side, as symptoms of ovaritis; but I am certain that, while they certainly may occur, none of them deserves that distinction. A practitioner finding all these symptoms combined in a case would have no right on that account to diagnose ovaritis.

Suppression or diminution of the lochia or of the menstrual flow have been said by eminent authors to be produced by ovaritis. My own observations are not sufficiently numerous to enable me to say that such results do not occur; but I am certain that an opposite result is more frequently observed, and in this I believe I have the support of the majority of observers. Several recent authors describe menorrhagia as a consequence of ovaritis, implying by that term an excessive flow within a certain time; but numerous observations lead me to differ from this opinion, and to believe that in the menorrhagia, if it may be so called, of ovaritis, the flow is not excessive within any stated time, but is long-continued. Besides, bloody discharge from the uterus may take place at irregular times. These so-called disorders of menstruation appear to me to be among the most characteristic phenomena of ovaritis. There is reason to believe that chronic ovaritis sometimes terminates in cirrhotic contraction of the ovary; and this condition, if it affect both ovaries, will naturally be expected to destroy their function, and, therefore, to be accompanied by amenorrhœa. In a well-made young-looking woman, who ceased to menstruate at the age of thirty-three, while otherwise in good health, and who died of disease of the heart at the age of thirty-five, I found both ovaries contracted into hard fibrous masses, presenting a pale surface on a cross section, and in bulk not equal to the fourth part of a healthy ovary.

There is a form of leucorrhœa which I have observed to accompany an attack of ovarian congestion or inflammation. As I cannot speak of it in general terms, I shall describe a well-marked example of it: A lady had twice come to Edinburgh from a great distance to consult me. She had a large family, and was a weak, hysterical woman. Her chief complaint was of sudden attacks of illness, of which the principal characters were, pain in the region of the left ovary, and copious discharge from the vagina of a watery fluid, which soaked her linen, which when dry was stiffened as if by starch, and of a dirty colour. On both occasions, a careful physical examination discovered no disease, and the announcement of this fact to my patient caused her much disappointment, for she well knew that there was some serious weakening disease to whose attacks she was liable, and which caused her great alarm. She therefore resolved to pay a third visit to Edinburgh, and reside there until the lapse of time should show that she was cured, or bring another attack of the disease for my observation. After being here for many weeks alone, she was visited by her husband, and within a day or two from this time I was sent for to witness a return of the complaint. The leucorrhœa was copious, and just as had been described. I found the cervix uteri softened and patulous, and the left ovary could be distinctly felt, enlarged to the size of a walnut, and very tender, and its tenderness could be identified with the pain which the patient suffered in the region of the organ. The attack had a great effect upon the constitutional condition of the patient, but it disappeared in a few days.

It is generally alleged and believed that ovaritis is inconsistent with fertility. This, I am certain, is a mistake. I have repeatedly known pregnancy to occur not only when there was ovaritis, but when there was double ovaritis, that is, when both organs were affected, and both greatly enlarged. I insist particularly on this statement, having made my observations in cases presenting at the time every diagnostic advantage, and which were for many years subsequently, and still are, under observation. My limited experience would justify me in saying that abortion or miscarriage is specially liable to occur in cases of this kind. In one very severe and distinctly-marked case of double ovaritis, where miscarriage took place in the eighth month, the patient described her monthly periods as having occurred regularly during the whole period of the pregnancy. While, then, I assert that ovaritis does not necessarily produce sterility, I have at the same time no doubt that it frequently causes it. This is easily accounted for in other ways than by supposing the disease to produce derangement of the proper functions of the ovary. Ovarian adhesions may prevent the proper mutual adjustment of the Fallopian tube and ovary, at the time of rupture of the mature Graafian follicle: displacement of the ovary may have the same effect: besides, a woman suffering from ovaritis, acute or chronic, can rarely submit to sexual connexion, on account of the pain it inflicts.

Patients suffering from chronic ovaritis often quickly assume evident outward appearances of depraved health: the dull eye, the pasty face, pallor, and anæmic look.

Ovaritis is only to be made out or diagnosed exactly by a physical examination. Manipulation of the hypogastric region generally discovers a feeling of fulness or tightness over the affected gland, but in many women fatness of the anterior abdominal wall may prevent the condition being felt. It is on a digital examination, per vaginam, that our chief reliance is to be placed. After ascertaining the position of the cervix and body of the uterus, the examining finger is pressed into the roof of the vagina behind and at either side of the uterine neck, and it may discover in the region of the affected ovary only the same fulness which has been described as being frequently felt on an external examination of the hypogastrium. If the ovary is prolapsed it is easily felt, as may often be done when it is in health; but, instead of having no tenderness, or swelling, or hardness, it is now, when inflamed, exquisitely tender, rounded, and more or less enlarged. Even when not prolapsed, the organ may, in a subject favourably disposed for this kind of examination, be found and manipulated by the common method of combined internal and external examination. If the organ is not adherent and fixed, its diseased condition may be made out with great precision.

Sometimes, especially if there are some adhesions, not parietal or pelvic, not fixing the organ, but merely connecting it with the uterus and restricting its mobility, it is difficult to diagnose the ovary from the fundus of a retroflected uterus. Danger of mistake arises from the circumstance, that a probe passed into the uterine cavity to aid in diagnosis, lifting up the uterus, lifts the ovary with it. The practitioner, finding the probe removes the tumour when it is pressed upwards, thinks the tumour must have been the fundus uteri. Such a mistake is, I am sure, often made. I can only prescribe for its avoidance the use of care, with a mind fully alive to the difficulty and the nature of the possible error.

If the organ be extensively adherent and fixed, then the conditions necessary for establishing precision are absent, and we have only a mass of tender hardness in one or other posterior quarter of the upper part of the pelvic cavity, or in both. In many cases such masses of hardness are known to be the consequence of ovaritis, from the history of the case revealing a progress from mobility of the inflamed ovary to fixation. If such a mass of tender hardness were felt on a first examination, its position might lead to a guess that it was perioophoritic, yet there would be no certainty that it was not produced by inflammation or other disease of the tube or of the uterus. This fixation of an ovary by adhesions I have observed to take place after the symptons were relieved; that is, pathological changes, immediately resulting from inflammation, were progressing while the symptoms of the original inflammation were diminishing, or were nearly gone. It is frequently said that parametritis, or more properly paraoophoritis or inflammation of connective tissue in the neighbourhood of the ovary, occurs as a consequence of ovaritis—a statement which I cannot positively attest by any observations of my own. Only, I ought to add, that I have notes of a fatal case, apparently from abscess found post mortem between the folds of a broad ligament, in which ovaritis was diagnosed.

When suppuration occurs in the ovary, or around it, it may be easily made out by the attendant phenomena, if they are well marked. They are, increase of pain, which sometimes has a throbbing character, once or twice daily attacks of fever, followed by perspirations, which are generally profuse. The feeling of fulness is supplanted by hardness, which has more or less of a renitent character. Sometimes, again, the hardness is in its central parts supplanted by the feeling of fluid contents. But it often happens that these phenomena, which collectively denote the occurrence of suppuration, are absent or very ill marked, and the practitioner is left in doubt, even when he is both experienced and skilful.

The prognosis in cases of simple ovaritis should always be very guarded. For, although many cases mend rapidly, many are very tedious. The occurrence of pregnancy is to be looked upon as favourable, especially in the ovaritis of the newly married; but it forms no sufficient ground for the prognostication of early recovery.

I have already said enough to show that, in this disease, the practitioner must use all his therapeutical skill to stop or to modify its progress. It is not to be wondered at that he is often baffled. For, besides the usual difficulties attendant upon treating a disease which is apt to become chronic, or is already so, he has special difficulties to encounter. The invaluable condition of rest of the affected organ cannot be maintained; the ovarian congestion attendant upon the maturation and bursting of a Graafian follicle comes to undo all that treatment may have effected. If pregnancy occur, the monthly ovarian congestion is probably altogether suspended, but only to be supplanted by a more permanent, if less active, hyperæmia. Sexual excitement—and I am conversant only with cases of ovaritis in which there had been previous cohabitation—is liable to reproduce or increase inflammatory congestion. In the case of the married, many circumstances not of a purely medical character may combine to render the physician unwilling to advise complete abstinence from sexual excitement: besides, it is, at least in many cases, highly probable that total abstinence from sexual pleasure would not have the desired effect, leading, as it would, to the irritation consequent upon unsatisfied desire.

I know nothing that is peculiar or specific in the treatment of acute or chronic ovaritis. The same general principles and method that are applicable to other inflammations must be adopted in this. A wise and experienced practitioner, studying the constitutional and other peculiarities of his patient, will have more success than the inexperienced; and there is very little more to be said, considering that I wish to avoid entering upon the wide subject of antiphlogistic treatment in acute and chronic disease. A few details may, however, be given in conclusion.

In chronic cases, two, three, or four leeches may be applied through a glass speculum to the cervix uteri, and the bleeding from the leech-bites encouraged, if need be, by hot fomentation of the vulva. The leeches may be repeatedly applied after successive monthly periods. In some cases it may be preferred to apply a larger number of leeches over the inguinal canal.

As in other chronic inflammations, counter-irritation is here often useful. It is best effected by applying the irritant over the inguinal canal adjacent to the affected gland. A small extent of counter-irritation, say about two inches square, is sufficient. It may be produced by a croton-oil liniment or antimonial ointment, or by keeping a blistered surface from healing. Instead of these forms of counter-irritation, a seton may be used.

The regulation of the bowels is important. For this purpose the gentle salines are best adapted. Some patients derive advantage from the use of mineral waters, such as those of Kreuznach; others receive benefit from the waters of Homburg or of Kissingen.

Iodine, bromine, and mercury may be used with all the care that is exercised in the administration of these remedies in other chronic inflammations.

The arrestment of leucorrhœa, especially by speculum and caustic, I do not think is desirable, at least in an early part of the course of a case. Indeed I have little doubt that the kind of treatment referred to is occasionally a cause of ovaritis.

The disease is universally regarded as difficult to treat successfully, and is liable to recur; and when it rapidly disappears under treatment, the practitioner, while rejoicing with his patient, must take care not to assume, without good reason, that his therapeutical proceedings have been the cause of the good result.

The treatment of ovaritis ending in abscess, whether in its substance or in the peritoneum around it, I do not consider at present. It forms part of the wide subject of perimetric abscess. I shall only remark, that several cases which I have met with lead me to believe that abscess of the substance of the ovary is much more dangerous than perioophoritic abscess.

ARTICLE II.—*Notes on Cases of Yellow Fever in St Kitts, W.I., during* 1868, '69, '70. By W. MUNRO, M.D., C.M., Medical Officer, District No. 1.

THE following paper, which is a kind of report of a number of cases which occurred in this usually exceedingly healthy island, in 1868, '69, '70, of yellow fever, is, I may premise, in many respects, necessarily imperfect, as all reports of cases occurring in private practice are apt to be. Some of the cases were under my own observation, but the greater number have been reported to me by my colleagues, all of whom I take the opportunity of most cordially thanking for their kind assistance. I have, in this report, in a great measure, avoided the question of treatment, which my limited experience does not allow of my freely discussing; but I dwell as forcibly as possible on all points bearing on the etiology of the disease. All the evidence I have been able to collect appears to me to point strongly to the correctness of the "infection theory," although I am by no means inclined to reject the idea that it can *also* originate *de novo;* indeed, I believe that the first case was most probably one so arising, the atmospheric and bad hygienic condition surrounding it acting as causes.

Annexed is a table (pp. 215–218) of, as far as I know, all the cases that occurred; before going into the consideration of which, however, I propose stating succinctly the views which, chiefly from what I have observed while collecting materials for this paper, I hold in regard to the infection of yellow fever. In the first place, as I have already stated, I consider that it may arise *de novo*, as it probably did in the first case in the table, of which more presently; but when once it *has* so arisen, such a first case becomes a centre of infection, not only for those in the house and attending to the sick, but for the air surrounding that house to an indefinite distance. This infectiousness of the air *might* pass away without doing any harm, but if any one, while it lasts, expose himself to any of the common causes of common fever (seasoning or colony fever), this poison now floating in the atmosphere, derived from the first case as a centre of infection, will attack him, and yellow fever will, so to speak, be superadded to, or in appearance take the place of, the ordinary fever. Of course those in immediate contact with the sick stand a greater chance of infection than others.

If the first or any other *infected* case remove to a distance from the locality of the original "centre of infection," he forms a new centre of infection, infecting the air, as in the case arising *de novo*, to an indefinite distance around him, and the house he lives in. I consider the dying stage, after black vomit has fairly set in, as the most dangerous to those liable to be infected, and also that there are emanations of yellow-fever poison from the corpse.

Of course, as is well known, the state of the weather must be favourable to the infection of the atmosphere from the first centre of infection; there must be little wind and great heat, otherwise the poison will be blown away whenever thrown off the body, and the case will be put down as a "sporadic one," one of which is seen in each of these islands, even the most healthy, every two or three years.

As to the age of the attacked. Very young children may be, but infants are not, old people seem also not to be, susceptible.

Europeans, and especially those just come out, seemed to be the most susceptible; then the Portuguese, nearly all of whom are natives of Madeira. Next to those came the natives of Barbadoes, who, I am informed by Dr Branch, a native of that island, are nearly as liable to the common colony fevers of the other West India islands, when they live in them, as English people. This appears to be because, Barbadoes being the most windward of the windward (or eastward) islands, and being flat instead of mountainous as the others mostly are, the breeze from the Atlantic blows constantly over the whole of it freely, so that it is comparatively cooler than the other islands, at least the leeward side of them—that is, the side protected from the Atlantic sea-breezes by the mountains in the centre of the island, as in St Kitts, where the windward temperature is usually four degrees Fahrenheit lower than the leeward, as I have myself observed here. The natives of the island of course, being accustomed to the heat, are not liable to fever; but Barbadians, having always been accustomed to what may be termed a windward temperature, are so. Thus, only two native white Kittifonians died of the fever (cases 56 and 108), and one of these was a boy, a "poor white" child, living in great poverty. Now, I do not consider a a boy of 14 years to be in the condition of a properly acclimatized native; he has not lived long enough to be so; for it seems to me not to be the case that West Indians are born acclimatized (*i.e.*, not liable to fever), but that, by having frequent slight attacks of fever during childhood and adolescence, they become so. A greater number of Barbadians, both absolutely and relatively, as compared with the number of the white natives and coloured natives, died of or had the fever. A number of Portuguese Creoles (those born in St Kitts of Portuguese parents) had it, but their conditions of life are different from those of the whites; they and everything about them being so filthy, that the wonder rather is that more did not die than that some did. I have not the least doubt, I may say here in passing, that had there been no Portuguese on the island the fever would have passed away in three months, as in former outbreaks, instead of lingering sixteen as it did. This may be worth the consideration of West Indian legislatures, who, in time to come, may have under consideration the question of importing Portuguese.

I subjoin a table (No. I.), showing the cases according to nationality; the Creole Barbadian being, for reasons obvious enough from what has been stated above, set apart from the Creoles of St Kitts, whether white or coloured.

TABLE I.

Nationality.	Total.	Recovered.	Died.	Per cent. of deaths to total.
Europeans and Americans,	15	8	7	46·6
Portuguese,	67	38	29	43·3
White Creoles of Barbadoes,	7	3	4	57·14
White Creoles of St Kitts,	7	5	2	28·5
Coloured Creoles of Barbadoes,	6	6	0	
Coloured Creoles of St Kitts,	3	2	1	33·3
White Native of Demerara,	1	1	0	
Black and Coolie,	2	1	1	50·
Totals,	108	64	44	40·7

From the table given above it is quite clear, so far as such a small number of cases can show, that the natives of temperate climates had both a much greater tendency to the disease than those of subtropical and tropical climates, and also that the disease is more fatal among them. In looking at the table, it must be remembered that there were not more than fifty Europeans and Americans in the island when the first case occurred, while there were hundreds of Portuguese. The greater tendency to the disease among the Europeans also showed itself in the fact, that, except the very first, all the cases in the beginning were Europeans, *new-comers*, and they were all fatal. The disease in some way seemed to gain greater strength as it remained longer in the island. From newly-come Europeans it spread to *adult* Portuguese (it is to be remarked that it began in a *child*, who, according to the views already stated, I do not consider to have been thoroughly acclimatized); then gaining further strength, it attacked Barbadians (cases 14 and 15); and laterly natives of St Kitts, both white and coloured, and in one case black; as also Europeans who had been many years in the island, and were thoroughly acclimatized. Throughout, the Portuguese served as a kind of pabulum, on which it was fed between the cases occurring among Europeans, natives, etc.

It may be that the atmosphere, becoming in course of time more and more thoroughly impregnated by the fever poison, is the cause of this increased power of attacking natives, coloured people, etc., who at first seem to enjoy complete immunity from it. This idea would appear to be strengthened by the fact that some of the cases occurring last were exceedingly virulent. Mr Grimes (case 93) died in three days; Antoine Farnance (101) in the same; Mr Guy (102) in five days. This last case was a very malignant one. Case 108 does not vitiate this, as it occurred in a poor white boy, who died more from want of food and exhaustion than from the fever itself; the poor whites here living in the most extreme poverty.

I append two tables (III. and IV.), the first showing the temperature and state of the wind from January 1867 to December 1869. It will thus be seen that while the first five months of 1868 were rather cooler than usual, the next six, including September, in which the fever arose, were above the average. To strengthen the point, I may mention that the means for the months from September to December 1866, were as follows:—

Sept.	Oct.	Nov.	Dec.
84·16,	82·35,	83·72,	80·53;

all of which, as may be seen on reference to Table III., are lower than the means in 1868, and, to a certain extent, than those of 1869. It is to be remarked, indeed, that the temperature of September 1869 was much above the average; while again, in that month in 1869, after it was thought the fever had left the island, it broke out anew.

It will be seen by the table, that during the whole of August 1868, except in one day, the wind was either light or moderate, and that this continued all through September, October, and November. To show how calm it was sometimes, I may mention that, having to go to Antigua on the 17th November in a sailing vessel, I passed three days and two nights in going a journey of only sixty-five miles, and this simply from want of wind.

I may here state, that the means given above were calculated from records of daily temperature kept by G. Evelyn, Esq., comptroller of revenue, which he most kindly lent me for the purpose. Being taken at the Customhouse on the sea-shore, they show a temperature on the whole about two degrees lower than that of the town itself; but this in no way detracts from their value for comparing the temperature of one year or month with another. Those of 1867 were taken at 9 A.M., noon, and 4 P.M.; those of 1868, at 10 A.M. and 2 P.M.

In regard to the rainfall, I would draw particular notice to the fact that September 1868 was the *rainiest* month of the four years, the rainfalls of which are given in the table, while the great bulk of the amount that did fall fell up to the 15th. Now, as seen in Table II., the first case *died* on the 21st, after about five days' illness. The child must, therefore, have taken sick either *on the day after the greatest rainfall of the year, or on the very day of that rainfall.* There is some marshy land to the eastward (windward) of the town, but I hardly think any miasmata from it could have caused or set up this child's fever, as it had no time to dry after the heavy rain, the child being taken sick, as already stated, at, or nearly at, the time of that rain. I am the more inclined to think that marsh miasm had nothing to do with the production of the fever, that in none of the cases which either came under my own notice or have been described to me, was there the least intermittance; they were all cases of continued fever, although different forms of it were presented. Besides this, in all cases in which I had a chance of examining the urine, I found distinct albuminuria, showing that the poison acting on the blood was specific, and not miasmatic or malarious.

The atmospheric conditions of the time at which the fever first showed itself may then be briefly summed up thus: Great and continued high temperature, little or no wind, extraordinary rainfall, and low barometric pressure. (See Table III.)

In accordance with Dr Parke's views, that yellow fever is a "fæcal disease" (see "Practical Hygiene," second ed., p. 446), a very probable fæcal cause might be traced as having something at least to do with the fever.

The greater part of the town of Basseterre was destroyed by fire on the night of the 3d July 1867,—a calamity which, among other misfortunes, by burning down the privies, left their pits open, with the exception of such ashes as fell into them. The old pit system is as yet the only kind here, although, after the introduction of water from a distance of five miles up the mountain (a work at present in progress, and which, it is hoped, will be finished by the end of 1871), it is to be sincerely desired that a better system of disposing of human excreta will be inaugurated.

These pits lay in this state until after the fever had begun, but have since been filled up or covered over.

It may, of course, be objected to this: Why did not the yellow fever break out sooner than September 1868—fifteen months after the fire? The answer to this lies, of course, in the absence of such atmospheric conditions as were necessary for the production of the fever, and which seem to have occurred for the first time for the fifteen months in the first half of September 1868.

I am not aware of any specially filthy state of the first house in its vicinity, but can only speak of the state of the town in general. The Portuguese, as a people, are, however, very dirty in their habits.

The considerations stated above all lead, as I will soon again have occasion to notice, to the idea that the first case *arose de novo*, although, on the other hand, it is not quite impossible that the child might, in his passage from Grenada, have come in contact with yellow-fever poison; this, however, as he came, so far as I could ascertain, direct, and in a sailing vessel, was very unlikely, to say the least. It will also be noted farther on, that similar "fæcal" conditions were present at Wingfield, where Mr Joseph Evelyn (case 70) was taken ill, with similar atmospheric conditions.

We may now proceed to consider the cases noted in Table No. II., tracing, where it seems to be possible, the connexion between different cases in the way of infection. In many cases it has been impossible for me to do so, especially among the Portuguese, many of those that died having no friends in the island—even when, after their deaths, I could obtain any information whatever as to their movements before they were taken sick, so as to trace where or how they got the fever.

Of case No. 1 I have but little more to add to what has already been stated. The child had come from Grenada about two weeks before it was taken sick, in good health. There was no yellow fever in Grenada at the time, as I have been assured by Dr P. M'Leod of that island, who most courteously and satisfactorily answered my inquiries on the subject. When first taken sick, he was supposed to have got a bad cold, and Dr Boon was not called in until the third or fourth day (the 19th). A day or two before he died he was removed to a house to the eastward of the one in which he was taken sick, and in which his father, Antoine Pistana (case 9) died afterwards.

Thus, this case seems to have been one of yellow fever arising *de novo*. He certainly did not bring the disease with him from *Grenada*, and as certainly his was the first case in this island for many years. The question may be mooted, was it a case of yellow fever from the first, or a case of common fever, predisposing to the attack of the yellow-fever poison, which had possibly been generated by the state of the atmosphere and other causes already noticed. I am, on the whole, inclined to the second opinion—a careful noting of facts connected with other cases having led me to believe that this is common—an ordinary fever predisposing to the reception of the yellow-fever poison. The question is very undecided, however. That it was a case of yellow fever, there cannot be the slightest doubt. He was attended by my much-respected friend, Dr Boon, who, having practised in St Kitts for more than thirty years, and seen in that time many cases of yellow fever, is too well acquainted with the disease to make any mistake in diagnosis, as a medical man only two or three years out from England, who had never before seen a case, might be very apt to do.

Whether marsh miasmata had anything to do with this case must remain, to a certain extent, an open question, although I think they had not, except in so far as they might predispose by their depressing influence. I am aware that others *might* differ from me in opinion. Having said all I know in regard to the case, and the time at which, and conditions under which, it occurred, I have done all in my power to put my readers in as good a position to judge as is possible.

CASE No. 2.—Mr Horne lived in a house about fifty yards from the last, to the north, *right in the direction* of what little wind then prevailed (see Table III., September 1869). Thus the child Pistana's case may have been a "centre of infection" from which Mr Horne received the poison some time before he was actually taken ill.

The night before he was taken sick, Mr Horne swallowed a hasty dinner, and then gallopped to a place about one and a half miles from town, and plunged into a bath while still heated. For the first day or two he appeared only to be suffering from ordinary fever brought on by his own carelessness; but at length yellow fever with black vomit set in and killed him on the fifth day. Now, it is just possible that he only had ordinary fever at first in reality, but that the yellow-fever poison still hanging about in the atmosphere, unable to attack him when in good health, seized on him when predisposed to its attack by the ordinary fever. It is at least very probable (and this applies to several other cases) that, had he not exposed himself as he did to the causes of ordinary fever, yellow fever would not have attacked him.

CASE 3.—Was at Mr Horne's funeral, and acted as a bearer (a very improper thing, I would observe, to allow Europeans to do in such cases). The day before he was attacked he was working hard at a forge at Bayfords, then walked home a distance of three miles in the cold damp of the evening (Bayfords being the coldest place in St Kitts), in a thin linen jacket. On the fifth day, when I saw him, the case appeared one of ordinary fever; yellowness of the eyes had only just begun to show itself, but the skin was very hot. It was not till the sixth day that it showed itself as decidedly a case of yellow fever, and he died on the seventh day. This case, therefore, would also support the idea that yellow fever is sometimes simply superadded to common fever. Having been exposed to the infection from Mr Horne, he might have escaped, but by acting imprudently brought common fever on him, which rendered him powerless to resist the action of the specific poison, which of itself would depress the nervous system. I would beg my readers distinctly to understand, however, that I merely put forward this idea for what it is worth, and not for one of which I consider there is any certain proof of the correctness.

CASE 4.—Mr Gillie was also at Mr Horne's funeral. He was much frightened at the death of Mr Johnson, and took to bed on seeing his funeral pass on the 10th, never to rise from it. He had very severe black vomit and bleeding from the nose, mouth, and conjunctivæ.

The fever seemed to be now fairly established, the air of Basseterre being impregnated with the poison, so far as can be judged from the continuance of the cases.

CASES 5, 6, and 7.—I have not been able to trace any connexion between these and any other cases; they probably got infected through the atmosphere.

CASE 8.—Master W. Laing. Not being acclimatized, as I have already said, I consider he was the first West Indian Creole who suffered. Although residing five miles from town, he came in every day to school, and thus got within the sphere of infection.

CASE 10.—M. Le Blanc. This was a very severe case. He recovered, but never got back his health, his stomach having been entirely ruined, so to speak. He never, up to his death, which happened eighteen months afterwards, was able to eat food enough to support him, but was compelled to really live on spirits. From what I observed in him, as also in other cases, in some of which I gave carbolic acid myself, in the belief that I was doing my best for my patients, as also from noticing that in cases in which it was not given no such after-consequences were produced, and even in cases in which it was given from the very first under my own directions (as in case 101) it produced no good effects whatever, I have become convinced that even if of any use—which I decidedly question—the mischief caused by it to the stomach, and even to the system generally, put a veto on its being used, and have caused me utterly to renounce its use internally in my own practice. Professor Lister has found the proper place for it, and there, so far as lies in my power, I will keep it in future.

CASE 11.—Mr Lozack has never entirely recovered his health since his attack. Carbolic acid was given to him.

CASE 13.—This was the first case out of town strictly speaking, as, unlike Willie Laing, Mrs Slack does not often come to town. Mardenbrough is about 700 feet above the sea, and nearly two miles from town, and is very isolated. Case 21 seems to have been infected from this, although in some way the poison lay dormant for nearly three weeks.

CASES 14 and 15.—Mrs Jordan was Dr Branch's servant, and was in the habit of looking after his clothes while he was in attendance on the cases of yellow fever. He saw the most of the cases up to this time. Mrs Branch, his wife, probably got it in the same way as Mrs Jordan.

CASE 17.—Mary Gumbs. This woman was the first case at any distance from town. Philip's being nine miles from Basseterre, I have been unable to get anything very definite from her; but from what I could gather, she seems to have been in town about a week before her attack. Be that as it may, her husband was in town very often, and may have carried the infection to her. She became a new centre of infection for the district in which she lived. The cases traceable to infection from this one are the following:—Nos. 18 and 22; and in the "doubtful cases," Suphrine Gumbs, and his wife and children.

CASE 18.—Spent a week in her house while she was convalescing, and when returning home to West Farm, on the last Sunday of 1868, stopped for a short time at Suphrine Gumbs's house to see him. When leaving the house he was struck down with fever, and died with black vomit on the following Sunday. Soon after, Suphrine Gumbs, and then his wife and children, were seized with all the symptoms of yellow fever, only their skins did not become yellow, and they had no black vomit. Dr Dinzey, who saw them, considered that they were cases of masked yellow fever. The husband and wife being old residents in St Kitts, and the children Creoles, may account for their escaping so easily, while their country people, more lately come, suffered worse.

CASE 22.—Joseph Sainte kept S. Gumbs's shop while he was sick, and just as he recovered was seized with the fever. This was a very virulent case. He was quite well on Monday the 24th January; was taken sick on Tuesday morning; and before I saw him at three P.M. on Wednesday, had had black vomit, and was in a state of collapse, with supression of urine, and muttering delirium. He died at two A.M. on Thursday.

CASE 19.—The only one in a coolie. Seen by Dr Branch. Canada is about 1200 feet above the sea.

CASE 23.—Mr Marshall's was a very severe case; only saved by stimulants, which were given him by the bottle, "coup sur coup." He has never entirely recovered his health, although now much stronger than he was for the first six months or so after his illness.

I have little to say of the next cases, except that cases 25, 28, and 29, were in a father and his two children; and cases 26 and 27 in a brother and sister, pointing to infection.

The fever now left town for some time, and, indeed, with the case of Jose Bresan, ceased entirely in the island for a month; when, on 8th April, it broke out with great severity, for the first time taking a kind of epidemic character, although on a small scale, in Sandy Point, ten miles from town. In these cases, I am informed by Dr Semper, the tendency to bleeding was very great, and the pulse was very little accelerated.

I know little of these cases individually, but would beg to draw attention to the tendency, so to speak, of the disease to pass further and further from the town, beginning at Sandy Point and passing more and more round the island with the wind. Case 52 is no exception to this, for he went to Big Sir Gillis's to see some of his friends sick of the fever. In some cases the poison would appear to lie dormant for a long time, but in this it acted very quickly. He went to Big Sir Gillis's on Saturday, and slept there, but was advised to return to the Hope Estate on Sunday, which he did. He did not appear very well when he got home, and on Monday was very sick. On Tuesday he was a little better and able to go out, but on Wednesday the fever fairly seized him. I did not see him until Friday (the labourers here, both black and Portuguese, being very dilatory in calling medical assistance). I noticed the same slowness of the pulse as Dr Semper in his cases, from which this one took its origin. He complained of fearful pains in the limbs and over the body. On Sunday the urine was intensely albuminurious, but the conjunctivæ continued clear. Refusing all treatment, he died on Monday, 17th May. Hope Estate is about 1000 feet above the sea, and much isolated, so that the disease had little chance of spreading further.

In June, as is seen by the table, the cases were few in number, and in July there were none at all—nearly seven weeks elapsing at this time, during which the island was free from the fever. In August only two cases occurred, just enough to take away our hopes that it had quite left us; but at the very beginning of September it broke out again, and continued through October, November, December, and part of January 1870; this time attacking, indiscriminately, not only newly-come Europeans and Portuguese, but old residents, and Barbadians, both white and coloured, and even Creoles of St Kitts, although not fatal among the latter, except in three cases, only one of these being an adult. Now, in looking at the tables of temperature, etc., I have given, it will be seen that while August was an unusually hot month, September was also both unusually hot, and the rainfall was the heaviest of the year. October also had a very heavy rainfall, with heat little diminished, and low barometric pressure. Thus, while the heat of August may have prepared the way, the heat and moisture of September may possibly again have roused up the dormant energy of the poison brought into action in the same month of the year 1868.

The question may be very reasonably asked, If such heat is necessary to the generation of the poison, how did the fever continue through November and December, the latter of which was rather colder than usual? To this, an answer will be given in my consideration of these latter cases, in which it will be seen that almost all of those of which I have been able to get any correct history, were connected either directly or indirectly with cases occurring earlier. Once infected, they would, of course, carry on the disease as long as there was pabulum for it to feed on, or until the atmospheric conditions occurred, of whatever nature these may be, in which infection is no longer possible.

I know little of cases 60 to 64, so will pass to that of John de Crosse (65). This one is of some interest, as it appears to have been a centre of infection for some others, directly or indirectly. The following cases might be so traced to it, so far as I could ascertain:—viz., 66 (67 and 68), 71, 72, 93, and the last "doubtful" case. It is not improbable, had it been possible to ascertain the intimate history of all the parties concerned, that some connexion *might* have been also traced between these cases and those of Miss Tony and Mr Joseph Evelyn, and so, through Mr Evelyn, with all the cases traceable to his; but all, or most of them, being dead, this is impossible, even if it were practicable in other respects. Francis John (66) visited John de Crosse while sick, and appears, from all I could learn, to have been infected by him, although, the case being more rapid, he died the same day. Francis John's two children (67 and 68) took it from him.

CASE 71.—Mr Pamento, manager of Lynch's, was very much alarmed about the fever. Fear indeed, by depressing the system, seems in his case, as in Mr Gillie's, to have predisposed to infection. His house was only about ten yards from John de Crosse's, and to leeward of it.

Maria Baptiste (72) was at John de Crosse's funeral, and probably visited him while sick. She thus carried it further round the island than it was before.

Mr Grimes (case 93) was the father-in-law of Mr Pamento.

Being a thirty years' resident, he might almost be considered a Creole. He did not seem to have caught the infection directly from Mr Pamento, as it is hardly probable, though quite possible, that the poison could have lain dormant from 13th October to 3d December; but he visited Lynch's house only a few days before he was seized, and may there have inhaled the poison from the still infected atmosphere. Besides this, his daughter removed to his house only a short time before his seizure, and brought some of her late husband's clothes with her. As there were no other cases near town at this time (Taylor's is only a quarter of a mile from town), it is almost certain that Mr Grimes got the infection from Lynch's in either one or other of the ways indicated above. For believing that clothes may carry the infection of yellow fever we have good reason, from the analogy of scarlet fever, its poison being, as is now well established, so communicable, as for instance is shown in a paper by Dr Hislop, in the *Lancet* of 26th November 1870. Mr Grimes might have escaped, but caught cold by exposure the day before he was seized, and so rendered himself more liable to attack.

Miss Tony (case 69). I have been unable to learn more of her case than is stated in the table.

Mr Joseph Evelyn (case 70). This is a very interesting case, having been directly or indirectly a centre of infection for many of the succeeding cases:—viz., so far as I could trace, cases 75, 76, 77, 78, 79, 81, 86, 87, 88, 89, 92, 96, 97, 98, 100, 101, and 102.

It is also interesting, as having apparently been produced by a combination of conditions now considered likely to act as predisposing causes, the exciting cause being exposure.

Wingfield House is "delightfully situated," so far as hygienic conditions are concerned, there being a cattle-pen on the one side, and a mule-pen on the other, the delicate aroma of the droppings from the inhabitants of which finds its way into the house with every wind that blows.

Living under such conditions, Mr Evelyn unfortunately got exposed at night, very lightly clad, while putting out a fire which occurred in the yard a night or two before he was taken ill, and very incautiously, so clad, sat all night watching in case it should occur again, it being believed to be the work of incendiaries. He caught what was simply supposed to be a severe cold, but which rapidly passed into yellow fever, of which he died.

CASE 75.—His brother, Mr Edward Evelyn, having been in attendance on him, was seized when going home to Matthew's, but being put in a *warm bath* immediately, producing *profuse perspiration*, recovered. As there were no other cases near Matthew's (which is twelve miles from Wingfield) it is improbable that he got it there, while it is in every way probable that he got it from his brother.

CASE 81.—Mr W. Evelyn, another brother, seized in the same way, after close attendance on Mr Joseph. Heldon's is about eight

miles west of Wingfield. His children anc
it from him.

Soon (about three weeks) after Mr W. E
and family shifted to Matthew's, and it m
whether they or Mr Edward carried the i
only strengthened and increased in amount
ried by him, as, soon after their arrival, a n
on the estate, and living in the vicinity of t
one after another—cases 76 to 79, 86, 92,

After their removal, two other children a
taken ill, then Mrs Howe, living at Greenhi
the sea), a servant in Matthew's, case 100, an
living at White's, was at Matthew's every
time. The people in Matthew's are in cons
those at White's.

It thus appears to me that on no othe
fection can we account for the disease spı
directions from the house of Mr Joseph Eve
miles in each direction, and appearing in a
his *two brothers*, no other cases occurring r
radius of some (in the case of Matthew's, m
very reasonably traceable to infection from

Of the cases of the Parson's, Rollin's, etc
what is stated in the table; but in the rem
several in attendance on the sick, or visitin
the disease.

Esperina Farnance (case 103) I saw on tl
ness. She was then past hope; she had bl
was highly albuminous. I could not trace
infected, if the disease in her case was so cau
to be some connexion between her case and
who was at school only about forty yards fr
she died, the house being just beside the spa
played. He was, I believe, the only white

Of the doubtful cases, Suphrine Gumbs,
very severe fever, which, although they had
skin or black vomit, as already stated, Dr
them, had do doubt, from surrounding circu
yellow fever. As these cases occurred early
fore the poison had acquired the power of kil
residents, and Suphrine and his wife were lo
going no further than it did, may perhaps be s

In my own case, I had heat of skin, with so
and headache, for one day. Although the wea
highest 77½°, lowest 73° Fah.—and I was un
exertion, and the house I then lived in (Baker'
much to the cold north winds, and the day sh
much that I had to change my underclothing fi

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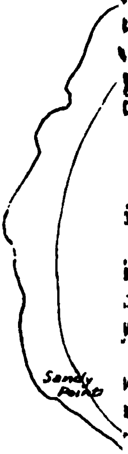

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day. Now I had seen case 22 only nine days before, an ordinary period of incubation in this climate, and, from after consideration of the circumstances, am strongly inclined to think that the sweating (which I can account for in no other way) was caused by the fever-poison, which was thus thrown out of my system. It is probable that, had I been exposed to rain at any time during the nine days, and neglected to change my clothes, so as to prevent free perspiration, I would have had a severe attack of yellow fever. The Rev. Mr Millet's and D. Longhead's were both considered cases of masked yellow fever by Dr Semper, who attended them.

I may mention here that in a conversation I had very lately with Dr Branch, who saw case 99, Roland, a black man, he stated that he had some little doubt as to its being a case of pure yellow fever. It might, therefore, be considered as a doubtful case. My tables were made up before this conversation.

As I said in the beginning of the paper, I have no intention to enlarge on the question of treatment. The main point in it is, by all and any means available and reasonable, *promote perspiration*. A hot bath at once on the patient being seized may be (as in case 75 it proved) the stitch in time saving nine, which no activity in after-treatment can make up for the want of.

I append an outline map of the island, which it will be seen is simply a mountain-range, the two sides of which are cultivated as far as possible. I have marked the estates where yellow fever occurred. The dotted line indicates roughly the road round the island. The south-east end, Salt Ponds, has no road from the other part of the island, all the communication being by sea. There being no whites there, there was no yellow fever. In counting the distance from two such places as Wingfield and Matthew's, the distance by the road is of course taken, there being little or no communication over the mountains.

Having thus completed these, I fear very imperfect, notes of the late outbreak, I would like to finish by saying a few words as to former epidemics, so far as I have been able to ascertain anything about them. The want of registration of deaths, until 1859, makes it impossible to give anything very definite. Dr Swanston, a retired medical gentleman, who has been in the island more than fifty years, has told me that there was a very severe epidemic in 1818–19; there was another in 1829–30; another in 1836, chiefly among the soldiers of the garrison then stationed in the town, which may account for its returning in so short a time; another in 1848; and the last in 1858.

In all these epidemics one common character has been noticed: they have begun with Europeans, especially new-comers, and have been most deadly among them. In the last epidemic, 1858, a number of the Portuguese died as in 1868–69.

Now, on looking at these dates, it must at once strike any one that there is a regularity in the recurrence of the fever, which is quite certain to be seen in the island some time between every seven and twelve years. Making allowance, however, for the great difference in the liability to attack of a country in which there resides a garrison of one or two hundred white soldiers, as, in 1836, was the case here—most of these being new-comers—and of one in which no soldiers live (at present, and for many years back, there have been none in St Kitts), seeing that the soldiers were congregated in a barracks, making its spread certain; while of the fifty Europeans in the island in 1868, at least thirty were scattered over the country, the balance living in different houses in town, and of these only about a moiety being new-comers. Considering all these points, I think we are quite warranted in believing that the period between 1829–30 and 1836 was a curtailed one—not representing the normal period of recurrence. The normal (at least under the present sanitary conditions of the town) period of recurrence may be considered at ten years, while the minimum would be about eight, and the maximum twelve. This maximum could, I believe, be very much lengthened, if not indefinitely so, by some improved system of removal of fæces, and very strict attention on the part of the authorities to all sanitary laws, especially about the months of August and September, and particularly when these months are unusually hot, rainy, and with little or no wind. Some system of putting the sick in quarantine would also be useful, and prevent the spread of the disease when it had begun.

I may mention, that Dr St Vel of Martinique has found that yellow fever recurs in that island every eight or ten years—(O. St Vel, "Des Maladies Intertropicales," p. 289).

What I have pointed out in regard to the time of recurrence of the fever might be of some importance to young men, and those interested in them, coming out to this island to live. For the next eight years the chances of a young man living are positively much greater than in England, so long as he does not live a fast life, and kill himself with drink, there being no typhus, typhoid, or scarlet fevers to cut him off, and the dysentery not being much more severe than in England, while inflammatory diseases of the lungs are very rarely seen, compared with their constant occurrence in England. One coming out now, or within the next five years, would be quite acclimatized by the time yellow fever comes here again (probably about September 1878), and need, if at all careful of chills, have no fear of it. A man coming here about 1877 or 1878, however, would probably have to face an outbreak, or perhaps an epidemic, while still unacclimatized, and would therefore need to be particularly careful to avoid all causes of common fever, as it would be impossible to say whether it would not end in yellow fever and death.

The same observations apply with almost equal force to the immigration of Portuguese.

TABLE II.—[* indicates "unknown."]

Date of Seizure.	Name.	Age.	Complexion.	Native of	Residence.	Result.	Date of Death or Recovery.	No.	No. Dead.	No. Recovered.	Remarks.
1868.											
*	Emmanuel Pistana	7 years	Portugue	...	Basseterre	Died	Sept. 21.	1	1	...	
Oct. 18.	James Horne	19 yrs.	White	Scotland	„	Died	Oct. 23.	2	2	...	7 months in St Kitts.
Nov. 2.	Alexander Johnson	22 yrs.	„	Orkney	„	Died	Nov. 9.	3	3	...	2¼ years in St Kitts.
„ 10.	William Gillie	21 yrs.	„	Scotland	„	Died	„ 16.	4	4	...	6 months in St Kitts.
„ *	Mr Fennel	Adult	„	England	„	Died	„ 25.	5	5	...	14 days in St Kitts.
„ *	Felician Fratas	28 yrs.	Portugue	Madeira	„	Died	„ 25.	6	6	...	
„ *	Louis Gumbs	Adult	„	„	„	Died	Dec. 4.	7	7	...	
Dec. *	Willie Laing	11 yrs.	White	Berbice, Demerara	Spooner's Cayon	Recovered	*	8	...	1	
„ *	Antoine Pistana	Adult	Portugue	Madeira	Basseterre	Died	„ 16.	9	8	0	
„ 14.	M. Le Blanc	28 yrs.	White	Canada	Rollin's Mons	Recovered	„ 20.	10	0	2	Five years in W. Indies, three [in Barbadoes.
„ *	Mr Lozack	Adult	„	England	Basseterre	Recovered	*	11	...	3	
„ *	Manoel Bresan	„	Portugue	Madeira	„	Died	„ 19.	12	9	...	
„ *	Mrs Slack	„	White	England	Mardenbrough	Recovered	*	13	...	4	About 16 years in St Kitts.
„ *	Mrs Jordan	„	Coloured	Barbadoes	Basseterre	Recovered	*	14	...	5	
„ *	Mrs Branch	„	White	„	„	Recovered	*	15	...	6	A slight attack.
„ *	Child of Mr Lagois	5 years	„	St Kitts	„	Recovered	*	16	...	7	
„ *	Mary Gumbs	Adult	Portugue	Madeira	Philip's	Recovered	*	17	...	8	Suphrine Gumbs' (*see* doubtful cases) stepmother. Case 18 died in Suphrine Gumbs' house.
„ 27	Alvine France	„	„	„	Ottley's Vill.	Died	1869. Jan. 2.	18	10	...	Two years in St Kitts.
1869.											
Jan. *	Coolie	„	Black	India	Upper Canada	Recovered	*	19	...	9	
„ *	Manoel Sobrana	„	Portugue	Madeira	Basseterre	Recovered	*	20	...	10	
„ 13.	Child of Mrs Slack	5 years	Coloured	St Kitts	Mardenbrough	Recovered	*	21	...	11	
„ 26.	Joseph Sainte	20 yrs.	Portugue	Madeira	Philip's	Died	„ 28.	22	11	...	40 hours illness.
Feb. 11.	Mr Marshall	Adult	White	England	Basseterre	Recovered	Feb. *	23	...	12	
„ 11.	Mr Merrin	„	„	America	„	Recovered	*	24	...	13	
„ *	Manoel Bresan	„	Portugue	Madeira	„	Recovered	*	25	...	14	

TABLE II.—*continued.*

Date of Seizure.	Name.	Age.	Complexion.	Native of	Residence.	Result.	Date of Death or Recovery.	No.	No. Dead.	No. Recovered.	Remarks.
1869.											
" *	Mary Gumbs	Adult	Portugue	Madeira	Basseterre	Recovered	*	26	...	15	Brother and sister.
" *	Paul Gumbs	18 yrs.	"	"	"	Recovered	*	27	...	16	
Feb. *	Manoel Bresan	10 yrs.	"	"	"	Recovered	...	28	...	17	Children of case 25.
Mar. 1.	Jose Bresan	5 years	"	St Kitts	"	Died	Mar. 8.	29	12	...	
Apr. 8.	Auguste Noon	Adult	"	Madeira	Alley, Sandy Pt.	Died	Apr. 11.	30	13	...	
8 to 14.	Thirteen Portuguese	...	...	at Big Sir Gillis	Sandy Point	1 died, 12 recovered	*	43	14	29	
" 19.	Mrs Jose Gonsalve	Adult	Portugue	Madeira	"	Recovered	*	44	...	30	Attended Auguste Noon.
" *	Jose Gonsalve	"	"	"	"	Recovered	*	45	...	31	Husband of case 44.
" *	J. Gonsalve's shopman	"	"	"	"	Recovered	*	46	...	32	
May 8.	Jose *	"	"	"	O'Dane's Estate	Recovered	*	47	...	33	Saved by champagne.
" *	Portuguese woman	"	"	"	Cayen, Sandy Pt.	Recovered	*	48	...	34	Bleeding from nose, etc.
" *	Portuguese	"	"	"	O'Dane's Estate	Died	May 14.	49	15	...	Walking on the day he died.
" *	Portuguese	"	"	"	"	Recovered	*	50	...	35	
" *	Emmanuel de Ram	"	"	"	Lee's Estate	Died	" 10.	51	16	...	Said to have visited Sir Gillis.
" 12.	John Gonsalve	"	"	"	Hope Estate	Died	" 17.	52	17	...	Visited Sir Gillis, and slept [a night there.
" 12.	Two cases at Cranston's, and one at the Alley,				Sandy Point	Recovered	...	55	...	38	
June *	Mr Slack, jun.	Adult	Coloured	St Kitts	Conolly's	Died	June 9.	56	18	...	Died at Mardenbrough.
" *	Antoine Gomez	10 yrs.	Portugue	Madeira	Willet's	Died	" 15.	57	19	...	
" *	Sailor on board barque in harbour of Basseterre				...	Recovered	*	58	...	39	
" *	Antoine da Costa	22 yrs.	Portugue	Madeira	Basseterre	Died	" 21.	59	20	...	
Aug. 10.	Caroline A. Curtis	3¼ yrs.	White	St Kitts	Boyd's Estate	Died	Aug. 12.	60	21	...	36 hours' illness.
" *	Charles Danver	Adult	"	England	Hospital	Died	" 16.	61	22	...	English sailor.
Sept. 2.	Two children of Mrs Arnold	...	"	St Kitts	Kittstoddart's	Recovered	Sept. *	63	...	41	
" *	— Mendoza	14 yrs.	Portugue	*	Clevelly Hill, Sandy Point	Died	" 20.	64	23	...	
" *	John de Crosse	Adult	"	Madeira	Bevin Island	Died	" 27.	65	24	...	
" *	Francis John	"	"	"	Lynch's	Died	" 27.	66	25	...	Visited last case.

TABLE II.—*continued.*

Date of Seizure.	Name.	Age.	Complexion.	Native of	Residence.	Result.	Date of Death or Recovery.	No.	No. Dead.	No. Recovered.	Remarks.
1869.											
Sept. *	Two children of Francis John	...	...	St Kitts	Lynch's	Recovered	*	68	...	43	Had black vomit.
Oct. 3.	Miss Tony	Adult	White	Barbadoes	Sir Gillis's	Recovered	*	69	...	44	Removed after seizure to Old [Road.
„ 5.	Mr Joseph Evelyn	„	White	„	Wingfield	Died	Oct. 10.	70	26	...	
„ 8.	Mr G. Pamento	„	White	England	Lynch's	Died	„ 14.	71	27	...	10 years in St Kitts.
„ *	Maria Baptiste	„	Portugue	Madeira	Estridge's	Died	„ 17.	72	28	...	Was at funeral of case 65.
„ *	Portugue man & wife	„	„	„	Parson's	Recovered	*	74	...	46	
„ *	Mr Edward Evelyn	„	White	Barbadoes	Matthew's	Recovered	*	75	...	47	
„ 24.	Joseph Brananse	Adult	Portugue	Madeira	„	Died	Oct. 29.	76	29	...	
„ 28.	John Fratas	21 yrs.	„	„	White's	Died	Nov. 2.	77	30	...	
Nov. 4.	Mary Julie Fernandez	7 years	„	*	Matthew's	Died	„ 9.	78	31	...	
„ 8.	Antoine Fernandez	9 years	„	*	„	Died	„ 12.	79	32	...	
„ *	Mrs Lyon's child	*	White	America	Basseterre	Recovered	„ 12.	80	...	48	
„ *	Mr William Evelyn	Adult	„	Barbadoes	Heldon's	Died	„ 13.	81	33	...	
„ *	Mrs Lyon	„	„	Scotland	Basseterre	Recovered	„ 17.	82	...	49	
„ 10.	Mary Andrad	„	Portugue	Madeira	Caine's	Died	„ 17.	83	34	...	
„ *	Theodore Andrad	„	„	„	Parson's	Recovered	*	84	...	50	No relation to Mary Andrad.
„ 15.	Joseph Pistana	„	„	„	Rollin's	Recovered	*	85	...	51	Visited Theodore Andrad.
	Joachim Fernandez	„	„	„	Matthew's	Died	Nov. 19.	86	35	...	
„ *	Two children of the late Mr W. Evelyn	...	Coloured	Barbadoes	Heldon's	Recovered	*	88	...	53	
„ *	Nephew of Mr W. Evelyn	Adult	White	„	„	Recovered	*	89	...	54	
„ *	Alfred Gumbs	13 yrs.	Portugue	*	Olivee's	Died	Nov. 26.	90	36	...	
„ 24.	Mary Pistana	Adult	„	Madeira	Rollin's	Recovered	...	91	...	55	Wife of case 85.
„ 30.	Antoine Baptiste	„	„	„	Matthew's	Died	Dec. 5.	92	37	...	
Dec. 3.	Mr Grimes	„	White	England	Taylor's	Died	„ 6.	93	38	...	Visited Lynch's a few days before. 30 years in St Kitts.
„ 5.	Mrs M. Arthur	„	„	St Kitts	Harris's	Recovered	*	94	...	56	
„ *	Two other children	of the	late Mr	W. Evelyn	Matthew's	Recovered	*	95	...	58	

						r very.	No.	No. Dead.	No. Recovered.	Remarks.
					overed	*	26	...	15	Brother and sister.
					ecovered	*	27	...	16	
					Recovered	...	28	...	17	Children of case 25.
					Died	Mar. 8.	29	12	...	
				, Sandy Pt.	Died	Apr. 11.	30	13	...	
				andy Point	1 died, 12 recovered	*	43	14	29	
			ra	”	Recovered	*	44	...	30	Attended Auguste Noon.
			”	”	Recovered	*	45	...	31	Husband of case 44.
			”	”	Recovered	*	46	...	32	
		”	”	O'Dane's Estate	Recovered	*	47	...	33	Saved by champagne.
		”	”	Cayen, Sandy Pt.	Recovered	*	48	...	34	Bleeding from nose, etc.
	”	”	”	O'Dane's Estate	Died	May 14.	49	15	...	Walking on the day he died.
	”	”	”	”	Recovered	*	50	...	35	
	”	”	”	Lee's Estate	Died	” 10.	51	16	...	Said to have visited Sir Gillis.
	”	”	”	Hope Estate	Died	” 17.	52	17	...	Visited Sir Gillis, and slept [a night there.
	on's, a	nd one at	the Alley,	Sandy Point	Recovered	...	55	...	38	
	dult	Coloured	St Kitts	Conolly's	Died	June 9.	56	18	...	Died at Mardenbrough.
	yrs.	Portugue	Madeira	Willet's	Died	” 15.	57	19	...	
Sail	n h	arbour of	Basseterre	...	Recovered	*	58	...	39	
* Anto	rs.	Portugue	Madeira	Basseterre	Died	” 21.	59	20	...	
0. Carolin	s.	White	St Kitts	Boyd's Estate	Died	Aug. 12.	60	21	...	36 hours' illness.
Charles		”	England	Hospital	Died	” 16.	61	22	...	English sailor.
Two chil										
Arnold		”	St Kitts	Kittstoddart's	Recovered	Sept. *	63	...	41	
Mendoza		Portugue	*	Clevelly Hill, Sandy Point	Died	” 20.	64	23	...	
Cro		”	Madeira	Bevin Island	Died	” 27.	65	24	...	
John		”	”	Lynch's	Died	” 27.	66	25	...	Visited last case.

TABLE II.—*continued.*

[illegible]	[illegible]	[illegible]	Complexion.	Native of	Residence.	Result.	Date of Death or Recovery.	No.	No. Dead.	No. Recovered.	Remarks.
1869.											
[illegible]t. *	Two chi[illegible] Francis J[illegible]	[illegible]	[illegible]	St Kitts	Lynch's	Recovered	*	68	...	43	Had black vomit.
[illegible]	[illegible]iss Tony	[illegible]	[illegible]te	Barbadoes	Sir Gillis's	Recovered	*	69	...	44	Removed after seizure to Old [Road.
[illegible]	[illegible]ph Evelyn	[illegible]	[illegible]hite	,,	Wingfield	Died	Oct. 10.	70	26	...	
[illegible]	[illegible]nto	,,	White	England	Lynch's	Died	,, 14.	71	27	...	10 years in St Kitts.
[illegible]	[illegible]	,,	Portugue	Madeira	Estridge's	Died	,, 17.	72	28	...	Was at funeral of case 65.
[illegible]	[illegible]	,,	,,	,,	Parson's	Recovered	*	74	...	46	
[illegible]	[illegible]	,,	White	Barbadoes	Matthew's	Recovered	*	75	...	47	
[illegible]	[illegible]	[illegible]lt	Portugue	Madeira	,,	Died	Oct. 29.	76	29	...	
,,	[illegible]	[illegible]	,,	,,	White's	Died	Nov. 2.	77	30	...	
Nov. 4.	M[illegible]	[illegible]rs	,,	*	Matthew's	Died	,, 9.	78	31	...	
,, 8.	Antoine [illegible]	[illegible]ars	,,	*	,,	Died	,, 12.	79	32	...	
,, *	Mrs Lyon's chi[illegible]	*	White	America	Basseterre	Recovered	,, 12.	80	...	48	
,, *	Mr William Evelyn	Adult	,,	Barbadoes	Heldon's	Died	,, 13.	81	33	...	
,, *	Mrs Lyon	,,	,,	Scotland	Basseterre	Recovered	,, 17.	82	...	49	
,, 10.	Mary Andrad	,,	Portugue	Madeira	Caine's	Died	,, 17.	83	34	...	
,, *	Theodore Andrad	,,	,,	,,	Parson's	Recovered	*	84	...	50	No relation to Mary Andrad.
,, 15.	Joseph Pistana	,,	,,	,,	Rollin's	Recovered	*	85	...	51	Visited Theodore Andrad.
	Joachim Fernandez	,,	,,	,,	Matthew's	Died	Nov. 19.	86	35	...	
,, *	Two children of the late Mr W. Evelyn	...	Coloured	Barbadoes	Heldon's	Recovered	*	88	...	53	
,, *	Nephew of Mr W. Evelyn	Adult	White	,,	,,	Recovered	*	89	...	54	
,, *	Alfred Gumbs	13 yrs.	Portugue	*	Olivee's	Died	Nov. 26.	90	36	...	
,, 24.	Mary Pistana	Adult	,,	Madeira	Rollin's	Recovered	...	91	...	55	Wife of case 85.
,, 30.	Antoine Baptiste	,,	,,	,,	Matthew's	Died	Dec. 5.	92	37	...	
Dec. 3.	Mr Grimes	,,	White	England	Taylor's	Died	,, 6.	93	38	...	Visited Lynch's a few days be- [fore. 30 years in St Kitts.
,, 5.	Mrs M. Arthur	,,	,,	St Kitts	Harris's	Recovered	*	94	...	56	
,, *	Two other children	of the	late Mr	W. Evelyn	Matthew's	Recovered	*	95	...	58	

TABLE III.—*continued.*

Month.		1867.	1868.	1869.
Sept.	Mean	82°·10	84°·6	85°·50
	Highest	87°·0 often	88°·0 on 1st, at 2 P.M.	90°·0 on 9th and 13th (often 89°).
	Lowest	80° on 9th, with wind at E.S.E., strong	81°·0 at 10 A.M. on 10th	76°.0 on 27th
	Wind	Light to strong, heavy squall on night of 8th	S. and S.E., light and mod.; thunder and lightning on 2d & 9th	Variable, light
Oct.	Mean	84°·05	85°·03	83°·44
	Highest	87° often	87°·0 often	88°·0 on 31st
	Lowest	80° often	78°·0 at 10 A.M. on 10th	80°·0 on 7th, at 9 A.M.
	Wind	E., mod. or light	Easterly, light and moderate	E. and E.N.E., mod. and light
Nov.	Mean	83°·60	84°·0	83°·96
	Highest	87°·0 on 1st	87°·0 often	87° from 10th to 14th.
	Lowest	78°·0 on 11th	77°·0 on 11th, cloudy	78° on 20th
	Wind	N.E. and E.N.E., moderate	Light and moderate	Mod. to fresh; squally on 16th, 17th, and 29th
Dec.	Mean	82°·36	82°·63	80°·90
	Highest	85°·0 on 5th & 6th	86°·0 on 2d, at 2 P.M.	86·0 often
	Lowest	78°·0 very often	77°·0 on 5th, at 10 A.M.	76°·0 on 22d
	Wind	E. and E.N.E., mod. to fresh; squally on 31st	W., light to strong; E. and S.E.	E. and N.E., mod. to strong

TABLE IV.—RAINFALL IN INCHES.

Month.	1866.	1867.	1868.	1869.
January	5·95	1·75	3·45	1·40
February	1·60	1·95	1·10	0·45
March	2·90	1·90	3·60	1·75
April	3·25	2·80	0·65	0·70
May	6·00	8·10	1·15	1·50
June	4·90	6·35	0·80	3·40
July	3·20	3·65	2·95	3·95
August	2·85	3·53	2·45	4·30
September	4·95	4·05	10·05	9·75
October	8·40	3·35	5·85	8·75
November	2·10	6·85	4·90	5·40
December	2·65	4·05	3·05	1·30
Total	48·75	48·35	40·00	42·65

Note to Thermometrical Observations.—September 1868 was the month in which the hottest days of two years' observations taken by myself, on the windward side of the island, occurred. On the 31st August and 1st September it stood at 87° F., the hottest before or after being 86°, and the ordinary highest 83° in the hottest months. I have recorded it as low as 68° in March.

Note to Rainfall Observations.—8·15 in. of the 10·05 in. which fell in September 1868 fell on or before the 15th, making this the wettest half of the rainiest month of the four years. Of this 8·15 in. 2·45 in. fell on the 12th, and 2·10 in. on the 15th. No such days of rain occurred before, from the beginning of 1866, except that on the 5th March 1868, when 2·10 in. fell. Only one day exceeded them in the four years, viz., the 25th September 1869, when 3·05 in. fell. This, it may be observed, was the next most rainy month of the four years, and while the first outbreak of yellow fever happened in September 1868, it broke out afresh in September 1869, after a very decided break.

Table V.—Highest and Lowest Barometric Pressures in September

	1866.	1867.	1868.	1869.
Highest,	30·02 on 5th and 6th.	30·03	29·98 on 5th.	29·97
Medium,	29·99	29·96	29·85	29·93
Lowest,	29·65 at 6 A.M. on 29th	29·92	29·80 on 10th.	29·81 on 25th.

N.B.—By "medium" range I mean that which occurred oftenest. The range between the 10th and 18th September stood between 29·80 on the 10th, and 29·96 on the 18th, in 1868. To give an idea of the usual range of the barometer here, I append the maxima and minima for the four years, with the months in which they occurred.

	1866.	1867.	1868.	1869.
Highest,	30·10 on 10th June.	30·10 in February.	30·09 in June.	30·10 in June.
Lowest,	29·65 in September.	29·80 in Oct. & Nov.	28·80 on 10th Sept.	29·74 in December.

September to December are the months of lowest barometric pressure, and it is to be remarked that in 1868, this was the month in which the minimum was reached, *only* a few days before the fever broke out, while it was at the same time the lowest in comparison with the pressure in the same months of the other years quoted.

ARTICLE III.—*A few Cursory Remarks upon the Treatment of some of the Specific and Septic Fevers.* By F. PAGE ATKINSON, M.D., etc., late Surgeon St Bartholomew's Hospital, Chatham, and Royal South London Dispensary.

IT is often curious to hear what diametrically opposite views are expressed by medical men as regards the treatment of disease; and to observe, how, for the same disorders, restoratives and stimulants are strongly recommended by some, and depressants by others. Unfortunately, there can be no doubt that this difference of opinion (which arises either from our ignorance as to what the nature of disease really is—whether, in fact, it is an exhibition of weakness or strength—or to our uncertainty as to the best method of setting right the altered balance of function or power) seriously interferes with the wellbeing of the profession, and has a tendency to lessen the confidence which the public ought to feel, individually and collectively, in the means taken to relieve disease and prolong life.

The arguments used by those in favour of bloodletting are:—

1. It gives relief to pain.
2. It diminishes swelling, and local redness, or congestion.
3. It temporarily diminishes abnormal heat.
4. Natural hæmorrhage is sometimes the turning-point of disease, and artificial loss of blood being equivalent to spontaneous may replace it.

Those, on the other hand, who advocate a supporting and stimulating line of treatment say,—

1. Every disease has a tendency to go on towards recovery, provided the patient be properly supported.
2. If no patients are bled at all, more recover than if all are bled, who have the collection of symptoms considered by experience to be benefited by venesection.
3. If no patients are bled at all, more recover than if all are bled, in whom sundry morbid changes of special parts are discovered.
4. The quick dicrotic irregular pulse, the hot burning skin, and the delirium, are signs of excessive *waste* of tissue.
5. The excessive waste or oxidation of tissue can only be met by support, and pouring into the system something (as for instance alcohol) which can easily be oxidized in its stead, or by neutralizing the material in the system which produces the increased waste; and I must say the force of argument undoubtedly seems to be on their side; at any rate, those who continue to place faith in bloodletting and a depressing line of treatment have yet to show they are right, by means of sphygmographic tracings and thermometric charts.

That certain cases recover upon a low diet, and without the use of stimulants, there can be no doubt; but this is no proof of the correctness of such a line of treatment. Of course, no one would for one moment venture to assert that stimulants are required in every particular instance, because such an assertion would indicate an entire ignorance of the subject, and a disbelief in the value of those symptoms, and in the utility of those instruments of precision upon which we now rely so much; but what is affirmed most positively is, that stimulants are required in a great proportion of cases, especially those of fever, fatty and valvular disease of the heart, inflammation of the lungs, etc., and that without them very many patients do badly. The reason I believe why many persons doubt the efficacy of stimulants is that they administer them at the wrong time, or in too great quantity.

But in addition to this difference of opinion concerning blood-letting and the employment of resoratives, there often appears to be but little accord amongst medical men as regards the general treatment of disease. This I think arises from—

1. Ignorance regarding the real action of drugs, *e.g.*, mercury.
2. Several drugs having more or less the same action, and the differences in action not being sufficiently explained, *e.g.*, cinchonine and quinine.
3. Ignorance regarding the pathology of disease, *e.g.*, diabetes.
4. Deficient primary medical education.

In order to be able to treat disease properly, we ought to have a clear understanding upon the following points:—

1. The nature of the ailment; *i.e.*, we must diagnose the case properly.
2. The condition of the organ or organs involved, the steps by which it or they have arrived at it, or their present condition (or, we must know the pathology of the disease).
3. The cause (or in other words the etiology) of the disease.
4. The action of the drugs with which we have to deal.

Take for instance a case of pneumonia, and let us analyze it in the manner described: the air-cells of the lungs are filled and distended with molecular matter. The cause has been cold, suppressing perspiration, throwing back an increased quantity of blood into the lung, and at last causing exudation of blood-corpuscles. What we have here to do is to restore the action of the skin, or, in other words, to get the system to retrace the morbid steps it has just taken. This is to be accomplised by means of warmth in the shape of linseed-meal poultices applied to the surface of the chest, and the administration of diaphoretics. In addition to this, where the pulse is dicrotic and the temperature high, alcohol should be prescribed in order to prevent the exudation of blood-corpuscles from the vascular walls, and afterwards to stop the transformation of exuded matter into pus. In cases of blood-poisoning, *e.g.*, fever where we are unable to make out the exact nature of the disturbing element, all we can do is to support life, and treat any bad symptoms that may arise. All remedies that have been at various times proposed as specifics in these cases have been found, on extended experience, to have little or nothing to recommend them beyond those that were already in use. Still, notwithstanding that every fever has a tendency to run a certain course—and nothing has as yet been discovered for rendering the duration shorter—we have it most undoubtedly in our power to mitigate the severity of the attack. In speaking of the treatment of fevers, I shall first describe that which is applicable to all fevers alike, and then that which is more or less special to each. But before doing this I shall make a few quotations regarding the nature of pyrexia, from Dr Gee's excellent lectures, just delivered at the Royal College of Physicians, London:—"The healthy body," he says, "possesses a power of keeping up a mean temperature of 99 degrees; to this end the amount of heat generated and the amount dispersed are both under control. In pyrexia this regulating function is disturbed in two ways:—

"*1st.* The standard of mean temperature which the body strives to maintain is pitched higher.

"*2d.* The powers by which the body keeps up the standard are weakened.

"At the onset of pyrexia, in the cold stage, when the standard of mean temperature rises rapidly, the vessels of the skin contract, so as to prevent any loss of heat equivalent to the augumented production; in the healthy state, the cutaneous vessels would, of course, relax under such circumstances. When the actual temperature has reached the ideal febrile standard set up, the generation and loss of heat become adjusted so as to maintain this morbid temperature: this is the hot stage. Lastly, as soon as the standard falls, a sweat breaks out, whereby to bring the febrile heat down to the normal as quickly as possible." It is perfectly clear, from these remarks, that it is important to obtain a free action of the skin at the commencement of all febrile attacks. This, I think, is most readily accomplished by administering the following mixtures in a state of effervescence every three or four hours:—Bicarbonate of potash, 20 grains; aromatic spirits of ammonia, 15 minims; spirits of nitrous ether, 15 minims. Water to the ounce. And, Citric acid, 15 grains; spirits of chloroform, 15 minims. Water to the half-ounce. The carbonic acid here given off acts as a direct sedative to the nervous system. The resulting citrate, by becoming changed in the system into a carbonate, takes up a certain quantity of oxygen; the ether also becomes oxidized in the place of the nervous tissue, and at the same time tends to lessen the temperature by relaxing the vessels of the skin. Purgatives in the early stage of fevers should be avoided, since harm, instead of good, is nearly certain to result if the case eventually turns out to be one of typhoid. Wine, I think, is rarely required till later on in the disease. Beef-tea should be given frequently, in order that the system may be able to pass through that stage of exhaustion which is certain to follow sooner or later. As soon as the fever has become fully developed, of course, treatment has to be applied to meet the particular necessities of the case.

In smallpox, our attention has to be directed mainly towards limiting suppuration. This, I think, can be accomplished by excluding all light from the apartment, and using a candle when it is requisite to look at the patient. (The exclusion of the actinic rays lessens suppuration as well as fever.) Smearing over the vesicles with collodion, a solution of gutta-percha in chloroform, or a paste made of carbonate of zinc 3 parts, oxide of zinc 1 part, and olive oil (as recommended by Dr Bennett)—by either of these processes air is excluded from the inflamed surfaces, and the inflammatory action lessened. (The exclusion of air I consider to play an important part in Lister's method of dressing.[1]) Administering alcohol internally, and some such mixture as the following every three or four hours:—solution of perchloride of iron, 15 minims; muriate of cinchonine, 4 grains; chlorate of potash, 10 grains; spirits of chloroform, 15 minims; water to the ounce. The alcohol tends to stop the exudation of blood-corpuscles from the vascular walls and the transformation of exuded matter into pus. Cinchonine is antiseptic in its properties, the same as alcohol. The iron is a blood-restorer, antiseptic, and controls capillary circulation. Chlorate of potash is a blood-purifier. In the next place, as this, in common with all other fevers, is supposed to be due to the presence of atmospheric germs, the room should be constantly undergoing fumigation with such materials as carbolic or sulphurous acid or iodine. It is certainly a great pity to see such a disease existing at all, for there can be no doubt that if vaccination and revacciuation were regularly and efficiently carried out, it might be completely swept away. Unfortunately, however, some persons, in spite of all that is said by competent authorities, remain firmly opposed to such methods of prevention, though they are altogether unable to give any reason why or wherefore.

In scarlatina, our chief anxiety is with regard to the throat. As long as the ulceration is not very extensive the patient can be kept up by support; but when this is very severe, nourishment can only be taken with difficulty, and the patient sometimes sinks from sheer exhaustion. In order, then, to cleanse the throat and stop the increase of germs, upon which the disease is supposed to depend, we order some such medicine as the following:—Dilute nitric acid, 15 minims; solution of perchloride of iron, 15 minims; chlorate of potash, 10 grains; spirits of chloroform, 15 minims; water to the ounce; to be taken every three or four hours. The chlorine which is here given off is known to have distinct antiseptic properties. A gargle also, consisting of 20 minims of tincture of iodine to the ounce of water, should be used frequently (it need only be held in the mouth while the head is shaking from side to side); and the room should be fumigated with sulphurous acid. Support is necessary in the shape of beef-tea and wine. When the skin is very hot and dry, I often administer solution of acetate of ammonia, half an ounce;

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[1] The exclusion of air forms no part of Mr Lister's treatment. *Vide* Journal for August, p. 150.—ED. *E. M. J.*

chlorate of potash, 10 grains; and water to the ounce; every three or four hours. The acetate, when taken into the system, relaxes the cutaneous vessels and becomes changed into a carbonate. During the process it takes up a certain quantity of oxygen. In this condition cold baths, or successive packings in wet sheets, are strongly recommended by some, in order to lessen the tendency to lethargy, phrenzy, putridity, and debility. The method of applying the cold-water packing is as follows:—Two beds are arranged side by side, and on each is spread a blanket which has been dipped in cold water. The patient, placed on one of these blankets, is enveloped in the wet blanket and covered with a dry one. After ten or fifteen minutes he is removed to the other bed, and treated in the same way. This change is repeated from four to six times, and if indicated by the symptoms, the measure may be repeated after intervals of twelve hours. Quoting again from Dr Gee's Lectures,—"The manner in which the augmented generation of heat in pyrexia is diminished by cold baths may be explained thus:—first, the fall of temperature which follows after moderate abstraction of heat in a healthy person occurs in fever patients also. The temperature rises at first during the bath, but a lowering of the body heat soon follows, and the depression of temperature lasts longer than the elevation; yet in severe pyrexia the depression soon passes off, so that the baths must be repeated in order to produce a decided cooling effect. Secondly, the temperature rises during the bath for a time certainly, but fever patients lose more heat during this period than healthy persons do. Moreover, the power to counteract cooling by spontaneous augmentation of heat generated—a power which is limited in health—in fever is still more limited; that is to say, under great abstraction of heat, less heat is produced in fever than in health. Hence, not only is the frigorific effect of the bath greater, but its calorific action is less in fever patients than in healthy people; more heat can be abstracted from the pyretic, and their power of maintaining a standard temperature is more easily overcome." The difference between the action of the cold bath and alcohol appears to be this:—The cold bath lessens oxygenation of tissue by lessening the supply of oxygen. Alcohol lessens oxygenation of tissue by supplying material capable of being oxidized in its stead.

In typhus fever, we have more especially to consider the condition of the brain. Medicine is of little use, and reliance must chiefly be laid upon the use of cold baths. Severe headache and delirium may be also relieved by the application of ether spray or ice to the forehead. For producing a quiet refreshing sleep, hydrate of chloral or bromide of potassium should be prescribed in preference to opium. The apartment in this, as well as in all other fevers, should be thoroughly well ventilated, and there should also be exclusion of light. Support in the shape of beef-tea, milk, curds and whey, eggs, jelly, wine, should be given frequently. The last-mentioned is best administered in small and oft-repeated doses.

In typhoid fever, we have to look mostly after the state of the bowels. If there is tenderness in the right groin, a mustard-poultice should be applied to this region. Diarrhœa, if excessive, should be restrained, but if only slight, left alone. If the tongue is very brown and tremulous, or there is any melæna, from 7 to 10 minims of turpentine may be given in a little mucilage, every three or four hours. It acts as a direct stimulant to the nervous system, and contracts the bleeding capillaries. Most reliance should be placed upon support, as medicine seems to be of little effect. Milk should be given in preference to beef-tea, and brandy to port wine. Raw eggs, corn-flour (made like blancmange), and jelly, may be given with advantage. Perfect rest on the back is of special importance. During convalescence, great attention should be paid both with regard to exercise and food. Too early exercise, or too early a return to solid food, may cause a most serious lesion-rupture of the bowels.

These are all the remarks I intend to make in the present paper, and, though short, I think they are sufficient to show that medical men do not, as is asserted, act in an entirely empirical manner, but they are able in nearly all cases, when required, to give some satisfactory explanation of the principles upon which they act. The man who prescribes what his forefathers recommended, simply upon the faith of blind experience, without inquiring for himself as to the why and wherefore, cannot but fall into the rear ranks of his profession, and prove a stumbling-block in the way of a general advance. Not only should we take into consideration the nature, pathology, and cause of each disease, but reason carefully upon the *modus operandi* of all medicines which we or others should propose for its cure. By so doing, we shall not only reap benefit ourselves, but most certainly advance the position of the profession to which we belong.

ARTICLE IV.—*The Normal Products of Hepatic Action.* By Dr JOHN G. MACVICAR, Moffat.

PART II.—Cholesterine. Choline, Neurine. Protagon. Dyslysine. Cholic, Glycocholic, and Taurocholic Acids. Acetic and Lactic Acids (a Digression). Tissue and Colorific Elements, Biliverdine, Cholophœine.

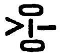
CHOLESTERINE.

IN what has preceded (see this Journal for August 1871, p. 128) we have the elements CHO when aggregating into a group of 12, giving what, for want of a more comprehensive generic term, we have called the glycogenic molecule. But this molecule results only when these elements aggregate with the carbon or oxygen centrad. When, on the contrary, the hydrogen is centrad, the molecule must consist of 4 members only, or possibly of 8, and ultimately and most perfectly of 20. Of the last, the icosatom, I shall say nothing here.

because (excluding albumenoid substances) the products of hepatic action do not appear to give molecules of a more composite structure than the dodecatom or the tetratom. We have already obtained certain products which are dodecatom, *i.e.*, we shall have to return to the dodecatom, for it is constantly recurring; but, for the present, we must turn our attention to the tetratom, *i.e.*, the molecule of four members.

The simplest of the type of the tetratom is that of 4 atoms of hydrogen, one standing as an axis for the other three, which lie at right angles to it, on the trigonal equator of the axial atom of hydrogen, and form three equatorial radii or arms. As might be expected of such a highly volatile and elastic element as hydrogen, this tetratom of hydrogen by itself cannot be condensed or retained in any kind of groupings or molecules at the surface of our planet. But when the tetratom is steadied by an atom of such a fixed element as carbon on each pole we have it; for there is then—

Marsh gas, . . .

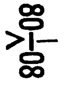


$C_2 H_4$

This, when the three equatorial arms are substituted by chlorine, gives chloroform, and explains a multitude of phenomena of chemical substitution in the laboratory, in which three atoms of hydrogen, neither more nor less, are so frank in departing and submitting to substitution, while a fourth resists and remains.

When brought into harmony with the oxygen (which is present universally in the terraqueous globe, except in a very few substances), by placing an atom of oxygen on each pole so that the poles are atoms of carbonic oxide, instead of merely carbon, we obtain the symmetrical state of—

Methylic alcohol,

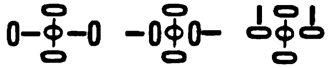


$C_2 H_4 O_2$

And of this we shall soon see the occurrence as a polar element in a beautiful product of hepatic action.

Marsh gas in the free state is rather an ultimate type and redintegrate of primeval genetic molecular action than a substance belonging to the condensed, the concrete, the organized sphere. Viewed in reference to that sphere, so little carbon with so much hydrogen is unnatural. Rather we are to expect that, instead of escaping with 3 hydrogen points naked, each of them will carry an atom of carbon, so that when all the oxygen has succeeded in escaping, we shall have as the lightest and least hydro-carbon of living nature, and as the product of the last vital analysis, a structure, the formula of its element $C_2 H_4 \times C_3 = C_5 H_4$.

But the molecular structure corresponding to such a numerical ratio of carbon and hydrogen is polymorphous in a high degree. This formula will therefore stand for many substances of different properties. But all of these structures when single are oblate in form. Hence they will tend to aggregate again into such molecules as their far-extending equators determine. Now, these equators are trigonal. The molecules, provided they be isometrical, will therefore be tetratoms and icosatoms. Now, of these the simpler gives the well-known formula of $C_{20}H_{16} = 4\,(C_5H_4)$; and I have elsewhere[1] shown how completely this structure explains the phenomena of the non-oxygenated essential oils; with regard to which, indeed, M. Cahours has shown that, along with $C_{20}H_{16}$, it is necessary to assume the groupings $C_{15}H_{12}$ and $C_{10}H_8$, leading to our structure C_5H_4 as the unit of the series.

An atom of essence,  etc. = C_5H_4

Such structures, then, under vast varieties of forms, and usually, no doubt, in coupled atoms, like the elements of the atmosphere itself, are everywhere escaping from the mature parts of vegetable nature into the atmosphere.

To their escape the vegetable kingdom mainly owes its fragrance.

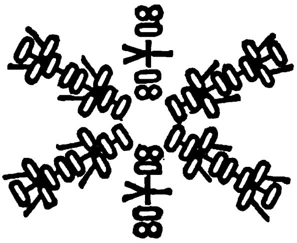
If, then, our theory of hepatic action be sound, we must expect some hydro-carbons of the same kind as its product. It is not to be forgotten, however, that there is such a vast difference between the organism of a plant or flower, so exquisitely expanded in the thin air under the genial radiance of the sunbeam, and that of the liver, crowded into a dark compartment inside the ribs, overlaid by the diaphragm, and by it cut off from all chance of communicating with the air, that it would be too sanguine to expect a hydrocarbon similarly to escape merely as fragrance from the liver. Rather we are to expect that in this viscus the fragrant elements will be packed together into some stable molecule, which will be persistently concrete, and therefore shall have little or nothing to give to the air, or to the olfactory nerves when snuffing the air.

Suppose, for instance, that the atoms of CH on the equator of C_5H_4 were united so that they shall be parallel to the atoms of C and H, which form the axis of the combination, as (though not well) is figured on the right hand in the preceding diagrams, then each molecule of C_5H_4 would be dissymmetrical, and therefore uninsulable by itself. Moreover, the equator would not project so far as to prevent their uniting into dodecatoms, that is, into the most stable kind of molecule. Suppose, then, that we have a dodecatom, composed of such elements in couples as its body, and differentiated on the poles by two atoms of oxygen, one to give fixity to the nucleus (by differentiation), and the other to protect from the further attacks of ambient oxygen, with an atom of marsh gas supporting each—that is, suppose we have for the molecule a body consisting of concreted essence, and poles of methylic

[1] A Sketch of a Philosophy, P. III., p. 77. Williams and Norgate.

spirit—we thus obtain a beautiful structure which gives the formula of—

Cholesterine,



$2\ (C_{52}\, H_{44}\, O_2)$

And here the necessity of having recourse to a woodcut has enabled us to place the equatorial atoms of carbon more correctly on the trigonal equator of the atoms of hydrogen. Why the molecule should give double the chemical formula has been already explained. And if we were to dwell upon it, we might show how well this molecule explains the characters and modes and places of occurrence in the organism of this beautiful but formidable substance, which is met with, not only in the liver, the gall-bladder and its ducts, but in the brain, the blood, etc., as also in the vegetable kingdom.

If it could be resolved into its organic elements without the decomposition of these elements, and if the equatorial elements could be reconstructed into one molecule, and the polar elements obtained separate, an atom of cholesterine would give—

1. Atom of heavy essential oil, $20\ (C_5\ H_4) = C_{100}\, H_{80}$
2. Atoms of methylic alchohol, $2\ (C_2\ H_4\ O_2) = C_4\ H_8\ O_4$

Cholesterine, . . . $2\ (C_{52}\, H_{44}\, O_2) = C_{104}\, H_{88}\, O_4$

According to this view, then, the habitual use of condiments, carminatives, etc., is not a trivial matter in a hygienic point of view. And, in reference to hepatic action, the essential oils, camphor, etc., when judiciously used, ought to be valuable medicines.

CHOLINE. NEURINE. PROTAGON.

It has been supposed, in what has preceded, that the only bond of union between the two atoms of essence ($C_5\ H_4$) which, when united, form the members or radii in the dodecatom of cholesterine is the dissymmetry of each, forbidding each to exist separately, and not in lesser groups than a couple, which is the simplest combination that gives symmetry. But the atom of essence may also itself have a symmetrical structure, as, indeed, it has in the first two diagrams that have been given of it above. And in this case, in order to bind a couple strongly together, some other element as a coupling joint is required; for the oblate form of each element of essence, though it must tend to bring them together in couples, and to keep them together while the conditions in which union took place continue to subsist, yet the coupled element must be liable to easy dedoubling and dissolution when these conditions are changed.

Hence an important part is played, both in nature and the laboratory, by a class of elemental forms which may be generally designated *coupling joints.*

Of these, the most important is oxygen, whose form, were we to go into the genesis of the elements on the principles of our molecular morphology, we should find to come out so that it resembles a doubly concave lens, a blood-disk, or a life-buoy. It is, therefore, admirably suited to serve as a coupling joint for structures whose poles are carbons or similar forms, for these may be said to resemble a convex lens, so that, with regard to oxygen and them, each is a mould for the other, like the glasses in a triple achromatic arrangement in an optical instrument.

The atom of oxygen, when acting as a coupling joint, exists often alone, and, indeed, in this case often binds the two elements in its poles on opposite sides so firmly together that they are wholly undecomposable in the laboratory, and only secularly decomposable during the lapse of long ages under the sustained action of the analytical energy of nature.

But where, instead of merely dry oxygen, moisture is present, and still better, when moisture and ammonia are present, a finer coupling joint may be constructed. In this case the atoms of O in HO form the poles of the coupling joint, while the atoms of H are inserted in the poles of an atom of *aq* or of *am* which forms the equatorial part of the coupling joint—the poles in both *aq* and *am* being negative or re-entrant and conformable for receiving the atoms of H of HO. We thus obtain as equatorial coupling joints or nuclei for axial forms—

The Aqueous coupling joint, $\begin{array}{c}\infty\\|\\*\\|\\\infty\end{array}$ or $\begin{array}{c}\infty\\*\\\infty\end{array}$ $= \mathrm{OH\,aq\,HO} = 3\,\mathrm{HO}$

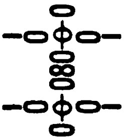
The Ammoniacal coupling joint, $\begin{array}{c}\infty\\|\\*\\|\\*\\|\\\infty\end{array}$ or $\begin{array}{c}\infty\\*\\*\\\infty\end{array}$ $= \mathrm{OH\,am\,HO} = \mathrm{Az\,H_5\,O_2}$

As examples of the first and second, consisting of pure oxygen and aqueous matters, we may take the camphors of nature and of the laboratory. Contrary to what usually happens, however, our formulæ in this case are halves of those of the chemist, he regarding the unit of essence as $C_{20}\,H_{16}$, while we regard it as the fourth part, viz., $C_5\,H_4$.

In natural camphor the coupling joint is simply an atom of oxygen.

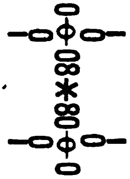
In artificial camphor (terpine, etc.), it is an atom of aqueous matter, such as has been described, which might be called basic moisture—

Camphor.



$\frac{1}{2}(C_{20}\,H_{16}\,O_2)$

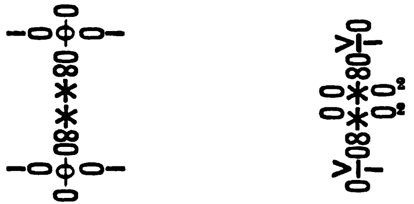
Terpine, etc.



$\frac{1}{2}(C_{20}\,H_{16},\,4\,HO + 2\,aq)$

And now, making the usual movement from the vegetable to the animal kingdom, let us substitute an atom of aquæform ammonia for the atom of moisture in the centre of the element of artificial camphor or terpine, and we obtain an interesting result, viz., a dimorphous element, whose formula is that of the lately-discovered

Neurine, or Choline.



$C_{10}\,H_{13}\,NO_2$

The diagram on the right hand represents the structure when assimilating itself to tissue. And if the carbon be doubled on the body (for which there is just room) it represents it as on the way for generating a colorific merely by oxidation or the discharge of hydrogen, as will soon appear more plainly.

The same translation of the 2 × 3 atoms of carbon from the poles to the equator may possibly take place in reference to the merely aqueous camphor, and the genesis of a colorific equally result.

But all such structures are capable of improvement by doubling, especially this neural and hepatic element, which when doubled gives a dodecatom of the simple hydro-carbon $(CH)_{12} = C_{12}\,H_{12}$, carrying an atom of that interesting substance aldehyde-ammonia on each pole—

1. Dodecatom of CH, . .	$C_{12}\,H_{12}$
2. Aldehyde-Ammonia, .	$C_8\,H_{14}\,N_2\,O_4$
1. Choline, ...	$C_{20}\,H_{26}\,N_2\,O_4 = 2(C_{10}\,H_{13}\,NO_2)$

It is never to be forgotten, however, that whether taken as single or double, these structures are only single elements or members of dodecatoms (or possibly of icosatoms) which are the true molecules.

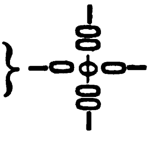
PROTAGON.

And here I am tempted to show that by constructing into a dodecatom these two isomorphous elements, that with the aqueous, and that with the ammoniacal coupling joint—the former as the body, the latter as the poles—of what is at any rate a most exquisitely constructed composite dodecatom, and by placing an atom of phosphorus as the coupling joint between two such structures, we obtain as nearly as could be expected or desired the formula of Liebreich's protagon, his element of the cerebral system. But to press such matters at the present moment is premature. The constructive faculty has not sufficient light to walk safely into the sanctum sanctorum of the temple of the organization. This much has been here mentioned, however, as serving to show the possible value of the liver to the brain, or the drag that it may be on it.

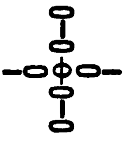
DYSLYSINE AND CHOLIC ACID.

Hitherto we have met with no other products of hepatic action but such as are also produced by vegetation. But from the more vigorous synthetic activity of animal life, and of such a massive organ as the liver, are we not to expect some richer hydro-carbon than the essential oil element, whose minim formula is $C_5\,H_4$? Yes; let us suppose that the main part of the hepatic hydro-carbon is the same, but that in the liver the vegetable hydro-carbon receives the usual addition of $C_2\,H_2$, that is, CH on each pole. We thus obtain a dimorphous structure for—

The Biliary Hydro-carbon, . . . }



or



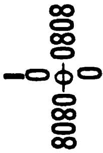
$= C_7\,H_6$

And now let us suppose that structures of this kind attach themselves around a glycogenic atom as a nucleus, the intermediate atom of hydrogen being common to both, we thus obtain at once the formula of

Dyslysine, . . . $C_{12}\,H_{12}\,O_{12} + 12(C_7\,H_5) = 2(C_{48}\,H_{36}\,O_6)$,

that biliary body which survives all others under the ordeal of the laboratory. Nor need we wonder at its so surviving, because in consequence of the dimorphism of the biliary hydro-carbon the dodecatoms may be differentiated in structure, and so rendered stable, while yet they remain isometrical in form. This substance does not, however, like the other dyslysine, more happily named cholesterine, occur elsewhere than in the laboratory.

Nor does it yet occur in nature, even when the polar elements are more fully differentiated by the accession of oxygen substituting hydrogen, so as to constitute them into what might be called—

Tricarbacetic acid, 

$$= \begin{cases} C_4 H_4 O_4 \\ C_3 \end{cases} = C_7 H_4 O_4$$

But we now obtain a dodecatom which presents itself in every case to the chemist, where the more exquisite differentiation of the poles by nature in the construction of the bile-molecules has been destroyed and substituted by moisture or atoms of H and O during the processes of the laboratory. For thus we obtain

$$\begin{array}{l} \text{Cholic, or} \\ \text{Cholalic} \\ \text{acid,} \quad . \end{array} \left\{ \begin{array}{ll} \text{The nucleus (sugar),} & C_{12} H_{12} O_{12} \\ \text{The body } 10(C_7 H_6), & C_{70} H_{60} \\ \text{The poles } 2(C_7 H_4 O_4, & C_{14} H_8 O_8 \\ \hline & C_{96} H_{80} O_{20} \end{array} \right\} = 2(C_{48} H_{40} O_{10})$$

And now we reach the bile-acids themselves.

GLYCOCHOLIC ACID, ETC.

The two most eminent biliary molecules, with regard to which there is room for believing that they have not been much altered by chemical processes, are glycocholic and taurocholic acids, or rather, indeed, these when steadied by an atom of sodium in each pole substituting the terminal atoms of hydrogen. These names are meant to be expressive of the fact that, under appropriate chemical treatment, both acids dedouble, the former yielding glycocoll, and the latter taurine, along with cholic acid in both cases. Now, where there is to be glycocoll, nitrogen will be given by combustion. And where there is to be taurine, sulphur also will be given. For these elements, then, we must provide a place in these acids.

Now, directing our attention, in the first instance, to glycocholic acid—which, as occurring in our own species, is the most interesting in a pathological point of view—and assuming that the body of the molecule is that which survives in cholic acid and dyslysine, we have only to determine the structure of the poles; for the poles, no doubt, contain the small quantity of azote which is found on combustion. But shall we suppose that this element exists as azote in a molecule before which there is such a long career of vital action as there is for a particle of bile? Azote is, of all known elements, the most truly residuary and inactive, nay, we might say, excrementitious. Doubtless, when functioning in the living organism, it exists along with its occluded hydrogen as ammonia.

Let us take, then, as the central element in the poles of the glycocholic molecule, an atom of aquæform ammonia.

But ammonia by itself is a vapour, and must be held down and fixed somehow, else it will be off. How, then, shall it be fixed here?

Doubtless, in the same way as aqueous vapour is fixed when occurring, like ammonia, in the living organism; that is, by carbon.

But how shall atoms of carbon apply themselves to our atom of ammonia in the conditions of existence in which bile is generated?

To this the most considerate answer is, that the atoms of carbon may apply themselves in many ways, thus involving occasionally the construction of abnormal as well as normal bile, and consequently a pathological as well as a healthy action of the liver.

But when we consider that the ultimate hydro-carbon, which is at once simple and symmetrical in all the hydro-carbons that we have yet met with, is the essential oil element or marsh gas with its hydro-carbon or hydrogen wings gone (which might be called

Apterous marsh gas), . . .

and that the exterior structure of an atom of aquæform ammonia, (being, as Laurent long ago supposed, a kind of hexagonal prism), is altogether suitable for receiving three such forms as buttresses to its alternate sides, we may meantime suppose that this is the way in which the atom of ammonia is fixed equatorially—an arrangement which appears to exist in the aspartic, and many other vegetable principles.

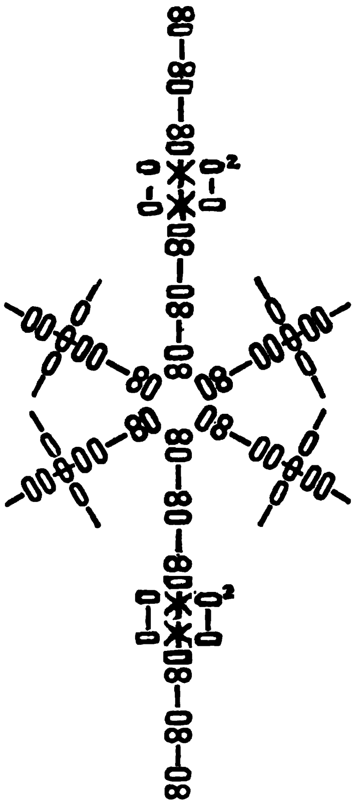
And what as to the poles of this beautiful ammoniacal structure? To this it may be replied at once, that saccharines (CHO), as, indeed, we have seen already, when they cannot construct a dodecatom, ever tend to go in sets of 3, while, at the same time, in every region of vital dissolution followed by reconstruction, saccharine elements are always present. This would give us, as the material of which the poles of the molecule of glycocholic acid are constructed, the remarkable numbers for the two poles—

$$\begin{array}{rl} 2\times2\times3 = 12 \text{ Saccharine elements, . . .} & C_{12}\,H_{12}\,O_{12} \\ 2 \text{ Hydro-carbo-ammoniacals, .} & C_{12}\,H_{12}\,N_2 \end{array}$$

or, leaving the innermost saccharines on the poles to appear as belonging to the saccharine nucleus, and adding an atom of moisture on each pole, we obtain at once—

$$\begin{array}{l} \text{Glyco-} \\ \text{cholic} \\ \text{acid,} \end{array} \left\{ \begin{array}{llllll} \text{The nucleus,} & C_{12} & H_{12} & & O_{12} \\ \text{The body } 10(C_7\,H_5), & C_{70} & H_{50} & & \\ \text{The poles, . . .} & C_{22} & H_{22} & N_2 & O_{10} \\ \text{Two HO, . . .} & & H_2 & & O_2 \end{array} \right\} = 2(C_{52}\,H_{43}\,NO_{12})$$

$$\overline{C_{104}\,H_{86}\,N_2\,O_{24}}$$



Glycocholic Acid.

$2\ (C_{52}\,H_{43}\,NO_{12})$

When this exquisite molecule is reduced by the consolidation of the polar matter, and the reduction of the ammonia to a nitrogen or urea state, it is easy to see that, by the appropriation of moisture, two atoms of glycocholic acid must give two of cholic acid and one of glycocoll in its mature or dodecahedral form (see p. 139).

With regard to taurocholic acid, the principal difference between it and glycocholic is that it carries also an atom of sulphur on each polar member.

There are also other acids of the bile in certain of the lower animals, in which there is a higher charge of carbon than in the human biliary acids when they are normally constructed. Thus, in the corresponding bile-acid of the goose there is $C_{12}\,H_{12}$ more than in glycocholic acid. And, by unnatural treatment of this bird, it is well known that the quantity of fatty matter in its liver may be increased enormously.

And most probably in ordinary cases in man pathological states of the bile consist in the main in an overcharge of hydro-carbon;

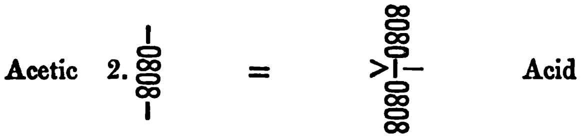
for carbon is the universal sedative entering into the organism, first indeed to protract existence, and to prevent life from being merely ephemeral, but when in excess tending to fix altogether, that is, to kill.

But molecular morphology in its actual state does not enable us to determine for certain the precise order in detail of the elements constituting such a molecule as a biliary body, especially the order of those of the polar members, although almost the whole of the functioning depends on the structure of the poles of a molecule. Since, therefore, we are forbidden to attempt to state the exact difference between normal or healthy and abnormal or unhealthy bile, when both give the same elements on combustion, we need not carry our constructions farther. And with a few words on the tissue elements and colouring matters constructed by the liver, I will bring this memoir to a close.

But before entering on the colorifics, it will be desirable to see our way as to the nature of certain acids which form the polar elements of these colorifics, and which, indeed, are constantly recurring during organic transformations, we mean the acetic and the lactic acids.

THE ACETIC AND LACTIC ACIDS.

Immediately resulting from the solution and disorganization of the saccharine molecule $C_{12} H_{12} O_{12}$ we obtain two acids—the acetic and the lactic—the acetic consuming two, and the lactic three saccharines (that is, atoms of CHO). These are placed on the same axis in both cases, which improves their symmetry so as to render them insulable, and therefore cognisable in the laboratory as separable or separate substances, at least when they have doubled. This doubling is in such cases the usual course of molecular synthesis in the procedure of nature. When, indeed, by so doing a tetratom of hydrogen, as in marsh gas (see the diagram on p. 228), may be constructed as the nucleus or equatorial body, it may be said to be universal. Thus we obtain—



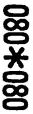
$$2\ (CHO) = C_4\, H_4\, O_4$$

Thus, as the product of the dissolution of an atom of a neutral or inactive sugar, we obtain the equation—

$$1 \text{ Sugar } C_{12}\, H_{12}\, O_{12} = 3\ C_4\, H_4\, O_4 \text{ Acetic acid.}$$

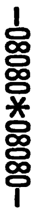
But it is also well known that the saccharine molecule (when its stability is increased by placing it in congenial combination, as when cane sugar is made to unite with lead oxide) may be preserved when its formula reduced to the lowest numbers is $C_{12}\, H_9\, O_9$.

Now we must look whether to such a sucrate there be not a corresponding acetate. And here it appears that by disposing of the moisture with the economy which the smallness of its quantity calls for, we obtain another acetic structure of great beauty, and which, if secluded from moisture, may be of great stability. In this case, for every 4 atoms of carbon there are 3 of moisture. Hence, in order to symmetrical structure, an atom of moisture must be in the centre of the structure. Now, this it can be if the resulting structure is to be a symmetrical form (which a position in the centre demands) not as HO, but only as aq. Into each pole of this central atom of aq, therefore, let the two remaining atoms of HO be inserted by their H poles, and there will be constructed as the equatorial body of the whole structure the beautiful form which we have already met with as the coupling joint of terpine, etc. (see p. 232). And thus in certain acetates we shall have—

Acetate acid  $C_4 H_3 O_3$

Moreover, this acetic form, when in the molecular state, and in the presence of moisture, will doubtless immediately take on an atom of HO on each pole of its 12 members, and thereafter diliquesce and dissolve. Hence, when dried again, the atoms of HO continuing attached, there will be given as before the formula $C_4 H_4 O_4$.

But many cases must occur where the saccharine or hydrate of carbon molecule in suffering dissolution must give the consequent synthesis of saccharine elements not in sets of two, but in sets of three. From this there must result elements in each of which there must be 3C, and when doubled 6C, with more or less of H and O according to the conditions of existence and the particular reaction. Without going over in detail the possible forms of this new aciduous structure, of similar origin, but one step higher than acetic acid, we may here notice that which the constantly recurring molecule $C_{12} H_{10} O_{10}$ must give when all the matter of it is engaged in this new and degraded arrangement.

Lactic acid  $C_6 H_5 O_5$

which, like the other just mentioned, will, when set free in the presence of moisture, and in the molecular state, become moist all over by the incidence of aq on each of its members, thus giving as the formula of each $C_6 H_6 O_6$.

And here I may remark, that this acid is an intensely interesting substance in a physiological and pathological point of view; for our molecular morphology shows that the lactic cylinder COCOC is nearly isomorphous as well as isobaric with an atom of chlorine. Hence there is in the animal frame, especially in the stomach, a play between chlorhydric and lactic acids, which it would be of great importance to understand; for while lactic acid, like chlorhydric acid, seems to be of great value in the stomach at certain times, it is undoubtedly a great evil in the blood and in the system generally.

Tissue and Colorifics.

The economy of Nature appears everywhere to be, first, to provide for The Useful, and when that is fully or more than fully done, to dispose of the surplus as The Beautiful.

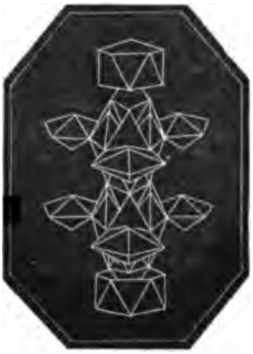
The nascent element, which goes to the construction of tissue, and gives growth of parts, is composed of the same materials, and possesses the same structure as that which imparts the beauty of colour to these parts.

The difference between the two, both being taken in their vernal or nascent forms, consists in this, that in the colorific element the quantity of carbon is much increased — we may say, generally doubled. This appears merely by comparing the respective chemical formulæ, without claiming any insight into the structure of the molecules more than these formulæ impart. Thus the proteine albumenoid, or tissue element, as obtained by C. Schmidt from the muscles of insects, the most perfect of muscular creatures, when reduced to its lower terms (one of the members or radii, 12 of which constitute a dodecatom, or 20 an icosatom, that is, a proteine), when compared with the long-established formula of indigo, the most perfect of colorifics, gives—

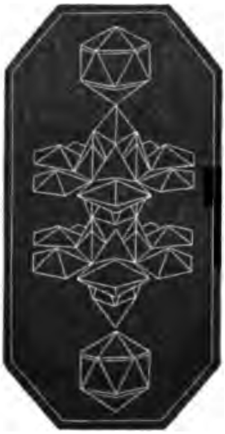
Muscle of insects, .	$C_8 H_5 NO_2 + HO$
Indigo, ...	$C_{16} H_5 NO_2$.

Unfortunately, it is impossible to give satisfactory diagrams of such molecules as these formulæ represent with types already in the hands of the printer, and on a single plane such as that of this paper. But the following, which give—as white lines on a black ground—the ultimate resultants of the elementary forces, or material elements, may be introduced here. They make an approach, according to our molecular morphology, to the true forms of the molecular elements. That on the left hand represents an element of tissue when first nascent, and fixed by a minimum of carbon atoms (the atom of carbon in each pole being not shown). That on the right hand is the same, now become a colorific element in virtue of its being fixed by a maximum of carbon atoms. The axis in both is an atom of ammonia in its aquæform state, which has six edges or sides; and these in the nascent tissue element on the left carry an atom of carbon on each alternate edge, and in the colorific on the right one on every edge.

A tissue element (nascent).



$C_8 H_5 N O_2$



A colorific element (nascent).

$C_{16} H_5 N O_2$

Now, if on the poles of this colorific element, instead of the remarkable spherule, $\begin{smallmatrix}\circ\\ \circ\circ\\ \circ\end{smallmatrix}=C_2O$, we substitute the more lengthened acetic element, $C_2H_2O_2$, and the still more lengthened lactic element $C_3H_2O_2$, we obtain—

$$\left.\begin{array}{ll} \text{1. The colorific body,} & \left.\begin{array}{lll} C_{12} & H_5 & N \\ C_4 & H_4 & \quad O_4 \end{array}\right\} + Aq \\ \text{2. Acetic poles,} \quad . & \\ \cline{2-2} & C_{16}\, H_9\, N\, O_4 \quad + Aq \end{array}\right\} \text{Biliverdine.}$$

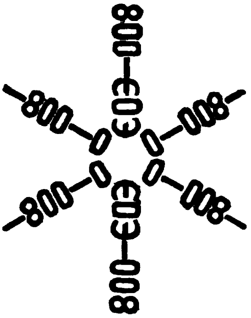
$$\left.\begin{array}{ll} \text{1. The colorific body,} & \left.\begin{array}{lll} C_{12} & H_5 & N \\ C_6 & H_4 & \quad O_4 \end{array}\right\} + Aq \\ \text{2. Lactic poles,} \quad . & \\ \cline{2-2} & C_{18}\, H_9\, N\, O_4 \quad + Aq \end{array}\right\} \text{Cholophœine.}$$

These may, however, be regarded rather as the vernal or nascent forms of the colorifics than as their mature and most stable forms. It appears that colorifics may indeed be preserved in these forms by being placed around so as to encase or enamel a metallic dodecatom, to differentiate which a tetratom of the colorific is placed on each pole. By this arrangement there may, for instance, be obtained a colophœite of calcium, the calcium being 6·86 per cent., while, from this or some such combination, Thudicum found 6·91, and Stoedeler 6·5 per cent.

But when left to the course of nature, all such structures tend to double; for by so doing they construct compact dodecatoms, sure to be duly differentiated by the reduction of the carb-ammonia to its carb-azotic state.

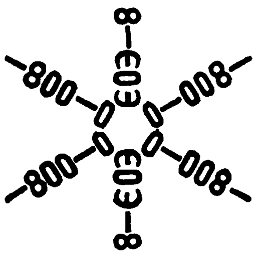
But what the actual arrangement of the successive elements in the constitutive members of the dodecatom from the centre outwards may be in any given conditions of existence, it would be difficult, if not impossible, to determine in the present state of molecular morphology. Taking them in their most fully differentiated forms, however, and as protected from the further attacks of oxygen by having their poles mailed in oxygen already, we obtain such diagrams as these—

$C_{36}H_{22}N_2O_{12}$



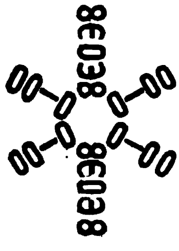
Cholophæine.

$C_{32}H_{22}N_2O_{12}$



Biliverdine.

$C_{32}H_{10}N_2O_4$



Indigo.

The great repository of such molecules is coal-tar, which, being the crude destillate of the most stable parts of the magnificent vegetation of a former world, is naturally full of colorifics and fragrant essences.

ARTICLE V.—*Cases of Amputation of the Penis; with Remarks.* By DAVID JOHNSTON, M.D., M.A., L.R.C.S., Surgeon to the Royal Infirmary, Montrose.

(*Read before the Meeting of the Forfarshire Medical Association, held on the 13th July* 1871.)

WHEN looking about me recently, in order to find something in any degree unusual, and not of everyday occurrence, which I might offer to you on this occasion, a patient happened to be under my care in the Infirmary here, in whose case I had performed amputation of the *membrum virile*, on account of malignant disease of that organ; and as in the course of the last eleven years other three instances of the same ailment, in each of which the same proceeding was adopted, have come under my notice, it occurred to me that a short history of the operation, and its results in these cases, might prove not altogether unacceptable to the members of this Association.

Most surgical writers state that cancer of the male organ is not of frequent occurrence. Perhaps it is not, if we take it in relation to the frequency with which this disease invades other parts of the body; but I think the fact, that four instances of this ailment have occurred in the practice of one of us, during a period so comparatively short, proves that it is not so infrequent as some indicate.

I can hardly conceive that any cause, short of the existence of disease of a malignant character, can necessitate this mutilation; and, as in my cases the relief from severe suffering was so decided, and the prolongation of life so unlimited, under circumstances of comparative comfort, even when the prognosis was far from favourable, I have been induced to select this subject for your acceptance to-day.

The first case was admitted into this Infirmary in March 1860. The man was a seaman, in his fifty-fourth year. He had been going to sea until within a short time of his admission, and was in fair general health. The entire glans and prepuce, as well as a considerable part of the body of the organ, were involved in the disease. There was a chain of enlarged glands in each inguinal region, and the man's sufferings were great. After a short trial of the effects of rest and escharotics without the smallest benefit, amputation was performed at the root of the organ by a single stroke of an amputating knife. Three or four vessels were secured by ligature, and a piece of dry lint applied. About two hours after the patient's removal to bed, very considerable hæmorrhage occurred, which was arrested by the application of a saturated solution of alum. In a very few days the glands in the groin began to diminish in size, the wound healed quickly, and in a few weeks the patient left without the least tendency to contraction of the urethra, but with two or three of the glands still enlarged. A week ago—that is, eleven years since the operation—I saw him quite well.

In the summer of 1865, a farm-servant from the neighbouring county, about sixty years of age, consulted me on account of epithelial cancer of the glans penis, which was the occasion of much pain, and prevented him following his usual occupation. His appearance was cachectic, and each groin was studded with enlarged glands. The prepuce and body of the organ were free from disease, and paraphimosis existed. The entire glans was removed in the same manner as in the former case. All the bleeding vessels were carefully sought for and secured; but in two hours I was again summoned, as the patient was faint from loss of blood. A very considerable stream of blood was seen to issue from the preputial orifice, but on exposing the wound only a general oozing could be discovered. A piece of narrow tape was tied tightly round the now flaccid and empty prepuce, with the effect of completely arresting the bleeding. This patient returned home within the week. He had no contraction of the urethra, and passed water freely. When he left, the inguinal glands were already undergoing a process of diminution. Three years afterwards, I was asked to see this man again at home. He was then labouring under a disease of an entirely different nature, of which he died. He was able to tell me that his old ailment had never again threatencd him.

A sailor, aged forty-two, was admitted into the Infirmary in December 1870, who had been for almost a year the subject of epithelioma of the prepuce and glans. He had a short time previously been in another hospital, where scissors and escharotics had been used without more than temporary benefit. When removal of the organ was proposed to him, he begged that measures of a nature less severe might first be had recourse to. Accordingly, while under the influence of chloroform, various masses of warty-looking structure, growing from hard broad bases, were removed by scissors, and potassa fusa freely applied. This proceeding appeared to increase the growth of the disease. By-and-by the encroachment of the cancerous mass upon the urethra rendered micturition very difficult, and the glands in the neighbourhood were visibly enlarging. The poor fellow was now anxious that the first proposal should be carried out without delay. This was accordingly done in the same manner as formerly. Every bleeding vessel was secured, but, as happened in each of the previous cases, profuse secondary hæmorrhage took place about two hours after the patient's removal to bed. This was speedily and most effectually arrested by drawing the loose integument well over the bleeding stump, placing it between the blades of a pair of dissecting forceps, close up to their junction, and then tying their points firmly together. The wound healed well, the glands diminished in size, and the man left. As the urethra showed a disposition to contract, a bougie had been regularly introduced for some time previous to his departure.

In the course of the summer he returned, on account of the difficulty he experienced when passing water, having been at work for a couple of months. During his absence he had attempted to dilate the urethra by passing a catheter himself, but he had evidently perforated the canal immediately under the symphysis pubis, the result of which was a considerable abscess. The urethra was freely divided upon a slender director with great benefit. When this patient left, it was doubtful whether, in addition to the urethral narrowing, a malignant deposit had not made its appearance in the situation of the urinary abscess, and helped to embarrass micturition. There was, however, room for hope that inflammatory condensation, the result of this abscess, might be the cause of the hardness, and may yet disappear.

The last case to which I shall solicit your attention is that of a labourer, aged fifty-five, who was admitted into the Infirmary in April of the present year. He also had been in another Infirmary previous to his admission here, when operative interference had been declined. In this instance the prepuce and glans, as well as the body of the organ, were involved. In addition to the chain of moderately-enlarged glands in each groin, there was in the right groin one gland larger than the others, having the skin over it slightly reddened. The entire organ was removed as on the previous occasions, but in this instance the urethral membrane was divided by scissors into four flaps, and each flap stitched by a fine needle and thread to the integuments, in the manner practised by M. Ricord. Ten vessels required ligatures. The wound healed well, without any tendency to contraction of the urethra; and when the patient left, the enlarged glands, even that one with the suspicious blush, were gradually getting less.

Remarks.—Malignant disease of the penis is accounted one of the diseases of advanced life. Amongst the cases I have brought under your notice, there was one occurring at the early age of forty-two, and it is the one which we discharged in the least hopeful condition. The result of the operation in this case induced me to deviate from the plan I had followed previously with so much satisfaction. The mode, however, last adopted seems preferable, as it ensures in a great degree the patency of the urethra, as well as the more speedy cicatrization of the wound.

The operation is an easy one. Professor Syme says, "The penis may be amputated without ceremony." He and most surgeons recommend that the organ be removed by a single stroke of a sharp amputating knife, and that a bougie be introduced occasionally to prevent contraction of the urethra during cicatrization. To obviate this, M. Ricord recommends and practises the plan adopted in the fourth case recorded in this paper.

Dr Watson of Edinburgh practises an operation which—to use his own words—consists in "thrusting a long and narrow bistoury between the corpus spongiosum and the corpora cavernosa near the root of the organ, carrying it forward for about an inch, when the corpus spongiosum and skin corresponding to it are divided by a stroke of the knife downwards, and the amputation completed by the division of the corpora cavernosa on the level where the knife was originally introduced. The skin then, dissected back from the corpus spongiosum, has a longitudinal button-hole made at its base, through which the corpus spongiosum is passed."

It is very generally advanced by surgical authorities that operative interference should not be had recourse to if the glands in the groin are affected. Now, in every one of the cases just narrated, this glandular complication existed in a degree more or less decided, and in all of them the operation was followed by great amelioration of symptoms and was no doubt the means of considerably prolonging the lives of the patients. Epithelioma is almost always the disease which causes a necessity for this special amputation, and every one is aware of the general success which attends removal of this disease in the lip, its most common situation, and the length of time it often exists in the rectum, before a fatal issue takes place, when excitement and irritation are guarded against. One peculiarity of the operation is the tendency to secondary hæmorrhage. In spite of the most careful and prolonged search for bleeding vessels, this occurred in three of the cases.

The object I had in view, in the preparation of this short and imperfect paper, was, if possible, to show that the unfortunate subject of malignant disease of the male organ should not be entirely abandoned, although the glands in his groin are, even in a considerable degree, affected.

ARTICLE VI.—*Case of Ovario-Mania.* By STRETHILL WRIGHT, M.D.; Senior Assistant Physician of the Royal Edinburgh Asylum for the Insane, Morningside.

INSANITY, connected with and dependent upon disorder or disease of the organs contained in the abdominal and pelvic cavities, is characterized by a want of power in the mental manifestations; it is insanity of the asthenic type. Cerebral disorders originating from temporary and curable abdominal disease are of frequent occurrence: they vary in gravity from the peevishness and feeling of incapacity for reflection produced by an attack of indigestion, to cases where the mental impairment is such as to necessitate placing the patient under supervision; thus affording the sane control of others to assist his own depressed and incapable will and judgment.

As an instance of mental disorder arising from such a state of things, and curable in its nature, I may mention the case of a patient who has recently left the Royal Edinburgh Asylum, having entirely recovered capability for the management of his affairs.

Mr B. followed the avocation of a pianoforte-maker, and for some time before his mental powers became impaired he had been very hard-worked; his digestion, under a system of long hours, no rests, and irregular comfortless meals, became entirely disordered. When admitted to the Royal Edinburgh Asylum this patient was in a pitiable state of general nervous and mental prostration, trembling from head to foot, bathed in a cold clammy perspiration, with a countenance expressive of the greatest distress. He could neither eat, sleep, nor think: if he forced himself to swallow, his food lay like a load on his stomach. The treatment of the case consisted in complete rest from physical exertion for a time, fresh air, the procurance of sleep, and the administration of laxatives and nervine tonics.

Van der Kolk gives a most vivid and excellent sketch of this form of insanity, in which he recounts his personal experiences of such an attack of bodily and sequent mental disorder. He ascribes the mental symptoms of such a morbid state to the effects that abdominal disease has in modifying the cerebral circulation, through its influence on the organic plexuses of that cavity. He states that, in his own case, the discharge of a solitary source of irritation—a hard mass of feculent matter from the bowels—*at once* relieved the mental symptom. He also narrates the case of a gentleman, whose melancholy, of several years' duration, was in like manner instantaneously dissipated by the ejection of similar masses from the bowel. In the case of Mr B. the mental disorder was not caused by the presence of an immediately-removable source of irritation, but on a depraved condition of the digestive apparatus. When, however, the stomach recovered its tone, then also the mind returned to its normal condition of sanity.

Such is a hasty sketch of a case where insanity depended upon a curable disordered physical state. In other cases, the originating cause of the mental imperfection is neither curable nor removable, and the cerebral affection dependent on it is permanent. The unhappy patient lives in a constant atmosphere of melancholy, and entertains delusions or fixed impressions of a depressing type, frequently traceable to and closely connected with the seat of organic disease.

To such a case Esquirol refers in his article "Sypemanie," where he speaks of a man who after death was found to have a cancer of the stomach. During life this man was plunged in a profound melancholy, and entertained the delusion that a crab was present in his stomach; he imagined that the suffering he experienced, which rendered his life wretched, was caused by the creature devouring his entrails.

It is of a case of insanity depending upon chronic disease of the female organs of generation to which I would draw attention in this notice.

Marion P. had twice exhibited symptoms of mental disorder, on
b occasions she was under treatment in the Royal
r um. The history of her case is shortly as follows:—

Marion P. inherited a tendency to mental derangement, her father and two uncles having been insane. She became insane for the first time at the age of thirty-five. She is reported, in the notes of her case taken at the time, as being naturally of a melancholic temperament, and of an industrious though unsettled disposition. It is said she received an injury of the head some time before this first manifestation of mental derangement, and since then she has been subject to headaches.

Grief at the desertion of her husband was assigned by those who brought her to the Asylum as the cause of her mental disorder. A peculiarity of manner had been noticed for seven weeks before it was thought requisite to place her under proper treatment.

The characteristic of this patient's mental ill health after admission was a great and constant depression. She had hallucination of vision, and imagined that she saw spirits. After being resident in the Asylum for about a month, she suddenly became excited, was restless day and night, especially at night; averred that the spirits were tearing her entrails, to which they gained admission by the vagina, and that persons unknown violated her person during the night. This state of excitement gradually abated, and she was discharged five months after admission, "nothing remaining of her insanity but discontent."

On her second admission her insanity was ascribed to the effects of a disappointment in love; her mind had been slightly affected about a month, but the symptoms of mental disorder had been grave for seven days. Her expression and manner were indicative of great mental depression. She entertained numerous unfounded suspicions of her neighbours, who, as she imagined, accused her of having given birth to a child, which she had murdered. She at this time also had hallucination of hearing. Her general health is described as "below par," her bowels being sluggish and her complexion sallow.

From this state she again rallied; her mind to a certain extent shared in the improvement, and she was again discharged, but very shortly returned to the Asylum, her mental disorder having manifested itself in full force immediately after her removal. From this time till her death this woman was occupied in the sewing-room, where she worked industriously. She lived in an atmosphere of deep gloom, and constantly complained that spirits and other unknown agents tortured her day and night, by thrusting instruments into her womb and having connexion with her.

It is curious that this patient, though her general mental powers were evidently somewhat impaired, would converse sensibly on topics of common interest, and was always most respectful in her manner.

She continued in this state for some time; then her digestion became much impaired; she complained of sickness and pain on taking food; she began to vomit whatever she took; the gastric pain became constant and severe. A very foul discharge made its appearance from the vagina; and, on examination, the os uteri was found to be hard and nodulated. She after this became rapidly worse, vomited everything she took, complained of racking pain in the back and loins, and died exhausted from want of nourishment, and the wearing effect of the pain she experienced from the cancerous affection and attacks of sub-acute peritonitis. A curious change took place in the symptoms of her mental disorder towards the close of her illness; she confused persons, and accused every one who came near her of contributing to intensify her sufferings. A post-mortem examination of the body was held the day after death, when it was found that the body generally was well nourished, and there was a proportionately large amount of fat in the abdominal wall.

The thoracic organs were perfectly healthy.

On opening the abdominal cavity, the great omentum was found to be so infiltrated with hard cancer as to present the appearance of a solid cake. The stomach was adherent by its greater curvature to this solidified great omentum; its cavity was reduced to about one-half its normal calibre by puckering of the greater curvature; but no ulceration had taken place in its interior. The parietal peritoneum of the greater omental sac was studded with miliform deposits of a cancerous nature. The peritoneum, forming the mesentery and covering the coils of small intestine, was free from these deposits, but was blackened, and presented the appearance of recent inflammatory action.

The uterus and ovaries were completely solidified by cancerous deposit in their substance. I have endeavoured to represent the appearance of this mass in the annexed sketch. There was no trace of cancer in the ligaments of the uterus or in the vagina.

The other abdominal organs were free from cancer.

The united stomach and omentum weighed 22 oz.

The uterus and ovaries together weighed 19 oz.

The brain was apparently quite healthy; it was small, but the convolutions were numerous and the sulci deep; there was about 2 oz. of clear serum present at the base.

The encephalon weighed 41 oz.

I have been induced to report this case, not that the mental symptoms are of an unusual nature, but because it well exemplifies the relation of cause and effect which the organic disease bears to the mental disorder in such instances.

Did space permit, it would be most interesting to discuss such a case from point to point; here only a short summary can be attempted. In this patient's case, then, a mind hereditarily susceptible of disorder is exposed to severe trials of a moral nature (her husband's desertion), and exhibits symptoms which, as they increase in gravity, even her neighbours recognise as morbid; her manner for some time had been "peculiar" It is impossible to judge how long the malignant disease of the abdominal and pelvic

organs had lasted, but her menstrual function at the time of her first residence in the Asylum was normally discharged.

It was not till after a month's residence that she became excited, and at this period of excitement she for the first time manifested delusions as to the violation and abuse of her person. It is, I think, interesting to find it noted that excitement supervened at this time, as showing that there was an increased action of the circulatory system. Might not this have been coexistent with the commencing cancerous deposit? Under careful treatment in the Asylum her bodily health improved, and she so far regained her mental stability as to be entrusted with her liberty.

On her second admission there was marked impairment of her general health; she had reached the age of 41, and did not menstruate after her admission. She again, under judicious treatment, rallied somewhat, recovered her sane mental capacity to a certain extent, and was discharged; but her health, after removal from the Asylum, at once broke down, and her mental disorder recurred in full force. As her constitution gave way before the inroads of her incurable disease, the symptoms of her secondary or mental disorder depending upon it became intensified; till, towards the very last, she lost all power of judgment, and accused those to whom she had formerly been attached of conniving at and assisting in her torture. In this, as in many cases of all forms of insanity, the manifestation of the disordered mental condition became much exaggerated at night.

The facts to which I would chiefly draw attention, as exemplified in this case, are, that, in many instances, specific disease, by its general effect on the constitutional tone, may so influence the condition of the brain as to produce a state of mind apt passively to receive impressions on the value of which it is unable to adjudicate. The mind, being thus morbidly and unduly impressed, produces insane manifestations.

When the physical disease is incurable, the insanity resulting from it is lasting, and from its nature and seat give form and colour to many of the phenomena displayed by the mind whose disorder depends upon it.

Dr Skae, of the Edinburgh Royal Asylum, is of opinion that chronic diseases of the female reproductive organs are, when connected with mental disorder, accompanied by a sharply-defined class of mental symptoms. To this form of insanity he has, in his classification of mental diseases, given the name of ovario-mania; and the case just narrated is an excellent and well-marked example of this mania in its incurable form.

Part Second.

REVIEWS.

The Medical Jurisprudence of Insanity. By J. H. BALFOUR BROWNE, Esq., Barrister-at-Law. London: 1871. 8vo., pp. 341.

NOBODY who knows anything of insanity will deny that this is a good subject for a book, and that a work upon the subject is much needed. Dr Blandford, in his recently-published "Lectures on Insanity and its Treatment," has two useful chapters instructing medical men how to examine patients, make out certificates, and perform what might be required of them under the Lunacy Acts. But the subject is too wide and too full of perplexing questions to be discussed in two lectures. Dr Blandford's book is the production of a medical man, will not be readily understood save by medical men, and takes what may be called the medical or pathological view of insanity. Mr Balfour Browne tries to occupy a middle ground. His work is designed both for the lawyer and the physician. He hopes that it "will do something to explain, and therefore to reconcile, the differences which too frequently arise between these in cases in which civil capacity or criminal responsibility is in question."

The son of the well-known Dr W. A. F. Browne, late Commissioner in Lunacy for Scotland, and the brother of the Medical Superintendent of one of the largest Asylums in England, the author has had unusual opportunities for making himself acquainted with the symptoms and nature of insanity, and some of his remarks show a considerable acquaintance with pathology in general. The notes and references at the foot of the volume indicate a wide study of the literature of insanity, while the author's knowledge of the legal bearings of the subject seem to be both thorough and extensive. Throughout the work the author gives evidence of a vigorous and cultivated mind, gifted with a correct judgment and much speculative acuteness. His style is lively, full of metaphor and quaint illustrations, but occasionally abrupt, and often diffuse. Like a young soldier armed with a breechloader firing ten times in the minute, in his eagerness to display his marksmanship, he wastes his ammunition upon this and that object, and encumbers himself with the spoils of the slain, instead of pressing on to pursue the survivors. An author's ammunition is his words, which he should try and use in a brief and telling manner; nor ought he to indulge in digressions merely because some happy idea has occurred to him which has a more or less distant association with the subject of his writing. Nevertheless, the book is pleasant reading; and no one can peruse it without acquiring a great deal of useful knowledge on the subject of which it treats, and exercising his mind on a great many problems similar to those he will meet with, if he has to do with insanity either as a lawyer or as a physician. To test a book of this kind one must consult it as well as read it; and we have looked for and found in Mr Browne's chapters advice which would, at one or other time, have helped us in bygone perplexities, and which will be useful to those that go after us in similar straits.

It is well known that there are long-standing differences of opinion between medical men and jurists upon the responsibility and civil capacity of the insane; and we agree with Mr Browne in thinking that the doctors have often made use of their knowledge in attempts to establish impracticable refinements. The lawyers, on the other hand, are apt to ignore pathological facts, and to trust entirely to observed symptoms. At the same time they have a much keener sense of what is necessary and fitting in order to make the machinery of law and society keep on working. As Mr Browne points out again and again, nothing is more delusive than to endeavour to dole out absolute justice to the case of every individual. It is this dream that is the cause of so many wild theories and discontented attacks upon the existing social order of things. It seems to us that many people in their tenderness to the insane altogether forget that the interest of the sane is a much more important matter. From a literal and pedantic adherence to the principle of non-restraint, they will allow an ungovernable maniac to tear up clothes enough to clothe half the inmates of the asylum, rather than put him at once in a strait-jacket. Some medical men would have all the eccentric and weak-minded people in the country under a lunacy certificate, and cover half the crimes that go before our law courts under the plea of moral insanity.

The Lord Justice-Clerk Inglis said—"Disease of the brain is not insanity. Disease of the brain is bodily disease, and insanity is mental disease, and no amount of bodily disease will justify you in pronouncing the persons insane." It would be easy to show how apt such assertions are to mislead a jury; but medical men are too prone to forget that very extensive disease of the brain may exist without the patient being either of unsound mind or free from legal or moral responsibility.

"To say," Mr Browne argues, "that in no case of insanity will the fear of punishment or the hope of reward deter the criminally-disposed lunatic from committing a crime, is to say what is denied by the experience of every director and superintendent of the insane throughout this country, who are in the daily habit of enforcing a code of discipline with the view of maintaining internal order in the establishment under their control; and to assert what no one in this country who has the least knowledge of the subject will believe, viz., that mental unsoundness is incompatible with crime. Indeed, cases come every day under the cognizance of those wh have to do with the insane, in which the criminal act is entire beyond the sphere and influence of the reigning delusion, and accordingly, in so far as that delusion is concerned, the product of a sound mind."

In discussing the legal relations of dementia, Mr Browne remarks —" Whenever the simple connexion between the act, and the punishment as a consequence of the act, ceases to be appreciable to the mind of the individual, all infliction of punishment should be done away with. But that there should be any hesitation about punishing a man because he is insane, if he understood that the act he committed was criminal, that it was forbidden, that it was punishable, and if he was able to refrain from its commission if he chose, seems to us an utterly unreasonable demand; and we believe that a man may labour under dementia in its first stage, and still know all these things, and have the power to refrain from any criminal act, and may, notwithstanding, commit an act which is criminal. In such a case the insanity is an accident to the crime—not an attribute. When it is the latter only, ought it to stand in bar of punishment?"

Mr Browne deals with the question of moral insanity in a very able manner. " If, however," he remarks, " our ideas of right and wrong are formed in connexion with the ideas of reward or punishment—if our dislike and disparagement of certain actions, and our approbation and praise of other actions, is founded on our belief that in the one case the individual committing the action should be punished, and that in the other case he should not, it is evident that our moral distinctions have an intellectual origin, and that any such phrases as moral sense, or conscience, as distinguished from ordinary intellectual function, are apt to deceive, and any distinction between moral and intellectual insanity is unphilosophical. This is not the place to consider whether this is a true statement of the fact or not." It has often struck us that many of those who argue for moral insanity being recognised as an excuse for crime and a bar to punishment, have never brought any theory of morals to maturity, or have actually committed themselves to the theory of the utilitarian, where, as Mr Browne remarks, moral actions cannot be separated from intellectual processes. Even granting that men's actions are necessarily determined by antecedent motives, the law has a right to introduce the threat of punishment as a motive to turn men away from actions injurious to the community; and where the threat fails, the punishment may at least deter others from similar offences.

Mr Browne, at the end of the chapter, makes a guarded admission of moral insanity, and we are half inclined to think he has granted too much. " Here we would," he says, " while we praise the caution of our courts of law in hesitating to recognise moral insanity, and point out that, from the rarity of cases in which this disease is unaccompanied by very prominent intellectual symptoms, very little injustice has been done in consequence of the law's unwillingness to recognise this kind of insanity,—censure the dogged persistence of lawyers, who will not, even in the present state of medical psychology, and with the amount of evidence which has been accumulated, admit that there can or ought to be a recognition of such a form of disease by our criminal law."

Mr Browne occasionally descends in a trenchant manner upon the fine-spun conceits of "alienist" physicians. "Many wise men have argued that under certain circumstances a man is entitled in mere self-defence to kill himself. Hume, Rousseau, Madame de Staël, Montesquieu, Montaigne, Gibbon, and Voltaire have all endeavoured to show that circumstances might justify suicide; and one writer, Robert of Normandy, surnamed the Devil, not only wrote in praise of it, but, knowing how much more powerful example was than precept, actually killed himself! Many men of much nobility have committed suicide; and Isocrates, Demosthenes, Cato, Lycurgus, Codrus, and a great many more, have tried to get into the next world by a sort of private entrance. But although philosophers and lawgivers once thought that suicide was not to be condemned, and imagined that circumstances might arise under which it would be the most rational course to pursue, in the present day we are informed emphatically that 'suicide is not the act of a healthy mind,' and are assured that in all cases suicide is a proof of the existence of insanity. So Sir J. Romilly, Lord Castlereagh, Cotton, and Chatterton were all mad according to recent medico-psychologists." So far has this notion been carried, that it was argued, in a recent number of the *Journal of Mental Science*, that life insurance companies ought not any more to refuse the payment of policies to the heirs of suicides.

One can scarcely expect that a book of this kind, entering up to so many difficult questions, should be wrought into such perfection as to be proof against all censure; but, in our opinion, if the author could have avoided digressions, he had left few faults for the critic to fasten upon. Mr Browne has no more need to give us a chapter on the causes of insanity than a lawyer writing a digest of statute law to give a chapter on the causes of crime. If he had in any way cleared up those causes, we should have welcomed his chapter; but this is too much to expect from a young barrister, however brilliantly gifted.

We do not want to be told that drunkenness, or phthisis, or want, or undue religious excitement, are causes of mental derangement. What we want to know is the manner and conditions under which they become causes: for it is clear that millions of people are addicted to drunkenness and religious excitement, and suffer from poverty, or from phthisis, or from both, sometimes from all those evils combined, and yet do not become mad. It is not a sufficiently precise statement that a man is shot because he goes under fire; the real explanation is, that he occupied space which was traversed at the same time by a bullet. The fountain Arethusa may have come from the Alpheus, but what we would like to know is, how it managed to get under the sea from Arcadia to Sicily.

Mr Browne, who talks with some contempt on the present "extraordinary desire for the education of all," naturally thinks very little of the attempts to educate imbeciles.

"One thing," he tells us, "has to be pointed out with reference to the educational improvement of which imbeciles are capable, and that is, that almost all the education which can be bestowed does improve, but tends only to make the imbecile more mischievous and troublesome. Their extra training seems only to teach them how more cunningly to perpetrate their vicious acts. It rather tends to make them more vicious. The reason of this is obvious. The education cannot be carried far enough to establish in the individual any good principles of morals. So, while the intellect has slightly improved, the moral nature is still undeveloped."

One would think that Mr Browne had some special knowledge on this subject which he was anxious to communicate at the expense of straying from his subject, though it is perfectly clear he has not mastered the preliminary details. Writing of idiots, he remarks, "Only in the rarest cases is the head of full size and well formed." Had he examined the heads of a large number of idiots, he would never have made so incorrect a generalization. No doubt, a very small cranium must ever be accompanied by idiocy, but those who imagine that idiots or imbeciles have generally skulls of the Neanderthal pattern have not drawn this notion from a proper study of the subject. We have measured and examined all the heads of the inmates of the Larbert Institution, and a good many elsewhere, and whatever may be the causes of idiocy, we can aver that microcephalic idiots are not common, and that the heads of idiots are not often misshapen, whatever may be the lesions within the external coverings.

Education has the same effect upon imbeciles as upon beings of higher intelligence; it increases their means of doing evil as of doing good, but it enables them to see more clearly the unhappy consequences of wrong-doing,—it calls their moral faculties as well as their physical powers into healthy exercise, and brings them more under the authority of their teachers and guardians, even when it cannot reach high enough to put them in dread of the statute-book. It weans them from the disgusting habits into which, if neglected, they are sure to fall, and in a great variety of ways increases their power both of self-control and self-help. As Dr S. G. Howe well puts it, speaking of the Pennsylvania Training School for Feeble-minded Children, "it has shown that idiots form no exception to the law, that every form of organized life is capable of being changed for better or worse by surrounding influences."

It is singular that a man of Mr Browne's culture should talk of some pathological observations being a confirmation of the theories of the phrenologists. Whether there is any truth in Broca's view, that aphasia is due to a lesion in a certain part of the left side of the brain, is far from being settled; but scientific men at present no more dispute about the truth of phrenology, as taught by Gall and Spurzheim, than they do about the vortices or phlogiston.

In conclusion, we wish success to Mr Browne's book. It is deserving of praise both from its ability and its completeness. It will be of service both to the physician and the lawyer; and from the lively way in which it is written, and the judicious selection of interesting cases with which it is illustrated, it will be read with no less pleasure than profit.

Thirteenth Annual Report of the General Board of Commissioners in Lunacy for Scotland. Edinburgh: T. and A. Constable: 1871.

We have seldom had so pleasant a task committed to us as the perusal of this blue-book for review. The Scottish Lunacy Reports have, year by year, emerged from the trammels in which the Commissioners originally bound them, and we now look upon them as becoming every year more valuable contributions to the general history of this part of the kingdom. With the means at the disposal of the Commissioners we should have reason to complain if they did not; but public officers do not always make the best use of their opportunities, and frequently look upon their places as conveniences for dignified laziness, or at best for busy idleness. No one, after reading the very interesting report before us, can say this of the Scottish Commissioners in Lunacy; there is rather matter for surprise that, after the naïve confession of the difficulty, from want of statutory powers, they have in procuring the information they want—the wonder, we say, is that they can do so much. They do not forget that the very essence of the commission under which they serve is, that they shall provide proper accommodation for lunatics, whether asylum or otherwise, and they approach this inquiry in a philosophical spirit, as little fettered by prejudice or biassed by a sense of power as can be reasonably expected from mortal man. Accordingly, we are presented with an interesting and trustworthy account, not only of the condition of the extensive lunatic asylums which have been erected all over the country, and which, from the character, as a general rule, of the medical men who superintend them, may be taken greatly upon trust; but we also have most valuable and thoughtful information on the state of lunacy generally throughout this kingdom.

On the 1st of January 1869, there were 7310 lunatics in Scotland, of all degrees and both sexes, exclusive of those maintained at home by their friends, of whom the Commissioners have no official cognizance, and whose numbers they estimate roughly at 2000. On the 1st of January 1870, there were, by the same method of calculation, 7571 lunatics. This statement, showing an increase as it does of 261 in one year, would be alarming enough of itself; but when taken in connexion with the fact, as shown by a table in the Report, that since 1858 the numbers have increased by 1664 lunatics, exclusive of the inmates of idiot schools, or at the rate of about 150 per annum, it deserves to be the theme of careful research. The Report does not enter on the delicate question of the increase of lunacy, but says that the augmented numbers may be attributed either to the growth of lunacy, or to an increased demand for proper accommodation for lunatics already in existence. Our space does not allow us to follow the Report through all the tables by which it argues out its suggestions and conclusions, and we shall therefore consider those conclusions without any more reference to statistics than is necessary to make ourselves understood.

As the greater number of the 2000 lunatics of whom the Board have no official knowledge belong to the classes little removed from pauperism, it is only reasonable to expect that they will gradually be officially known to the Board, as their friends become unable to maintain them. And thus we have an unpleasantly convenient reserve fund of lunacy, upon which we shall have to draw for many years to come, at the average rate of 150 per annum. The taking of efficient prospective measures for the relief and accommodation of these people is one of the gravest social questions of the day, and it is most surprising that it has attracted so little attention. Large asylums of the most modern type have been built all over the country, able physicians have been appointed to superintend them, no expense has been spared, and still the cry is, "They come, they come!" It is hard to say what is to be done. After all the enormous outlay, it cannot be said that these splendid appliances have done much in the way of arresting the increase of lunacy; and if year after year we are to be told that there is an average increase of 150 officially reported lunatics, *plus* this reserve fund of 2000, we shall soon listen with willing ears to any proposal for disposing of them. We hope we shall not be misunderstood. We do not mean that large district asylums are a mistake. No one who has paid any attention to the subject, who has even taken the trouble to read the first Report, with the Appendix, published, we think, in 1856, by the Scottish Commissioners, would venture to say that. But the evil of the matter lies in this, that the superintendents of these district asylums are too prone to consider their establishments as the centre-pieces round which all other appliances are to be grouped as mere auxiliaries. If they were hospitals for curable cases only, the view would be a correct one, but the mass of the lunatics in them is composed of cases, in all important features, the same as those which are provided for elsewhere. The fact is, that these district asylums, on the principle on which they are at present managed, are themselves only part of one great scheme, and only entitled to more important consideration because they have a larger number of inmates than small licensed houses. And all schemes for making them the centre of a lunatic colony are mere playing with the subject. The views of the Board of Lunacy on the matter are so entirely in accordance with our own, that we give their words:—

"The obstacle which appears to have hitherto most stood in the way of effect being given to the provisions of the statute for the removal from asylums of patients who have so far recovered as to be harmless, is a feeling entertained by the medical superintendents that a certain amount of responsibility would attach to them for recommending or permitting the removal of such patients; and accordingly some of them, while fully admitting that many inmates of their asylums do not require the special appliances of such institutions for their proper care and treatment, are averse to their removal from their own supervision. But we have already shown that in the cases of private patients, removal from the supervision of the asylum superintendent is a matter of comparatively ordinary occurrence, without, to say the least, the obtrusion of any evil results; and we can see no reason for expecting a different effect in the cases of pauper patients. It has been suggested that the patients whose detention in the asylum has ceased to be necessary, should be removed to villages or cottages in the neighbourhood of the institution, where they might still be under the supervision of the superintendent. But under the existing statutes this scheme is incapable of realization. It has to be kept in view that the asylum superintendent is the servant of the District Lunacy Board, and that the functions of that Board are restricted to the erection of asylums, and to the proper care and management of the patients placed in them. They are not responsible for the treatment of patients placed elsewhere, and, although they might appoint district inspectors to report on the condition of the asylums within their district, they could not delegate to the asylum superintendent, nor even to such inspectors, authority to take charge of patients in private dwellings, seeing that no such authority is vested in themselves. Besides, under a scheme of this kind, many of the patients would necessarily be at a distance from their homes, beyond the reach of their friends, and still under rules and regulations scarcely less irksome than those of an asylum. We can see little advantage, either to the ratepayers or to the patients, from such a scheme; while we would fear that the condition of the inmates of the asylum would materially suffer, from the divided duties of the superintendent, which it would involve. We shall have occasion to show in a later portion of this Report, how persistent must be the supervision of an asylum to guard against accidents, and how many of a serious character take place, even under a system which demands the whole time and attention of the superintendent. Besides, we think it highly improbable that the legislature would consent to alter the present statutory provisions, seeing in how great a degree their object has hitherto been disregarded."—Pp. vii., viii.

If these views are correct, and all experience and expediency say they are, it is plain we must look to other quarters for help.

The quarter to which the Commissioners point is the establishment of a more recognised system than holds at present, of distributing the harmless chronic insane amongst their own homes, under the care of trustworthy guardians, who shall be in their turn under the supervision of the Board of Lunacy, in the person, we believe, of the Deputy Commissioners. This system, which is in a great measure peculiar to the Scottish Lunacy Board, is of the utmost practical importance, and one which has, under the able direction of the Board, assumed large proportions, as a valuable and now, we may say, indispensable part of the working of the Lunacy Acts. At the same time, it is a system which requires to be most jealously watched, and to be enlarged only by the most gradual steps. The supervision exercised by the Deputy Commissioners is not, from the fact of there being only two, sufficient for an extensive scale of operations, and we wonder that they have been able to do so much. To work the thing properly, there should be at least two more appointed. We make this suggestion because we are this year deprived, in the Report, of the interesting accounts of what has been termed the "Cottage System," which have in former years been one of the most readable portions of the blue-book. This omission is due to the Deputy Commissioners not having had time to overtake their work.

In the beginning of this article we spoke of the naïve confession of the want of statutory powers by the Board. This is apparent in many parts of the Report. In one part they say that "the difficulty in procuring accurate returns from inspectors of poor, prevents us from bringing down the general statistics of lunacy to a later date than the 1st of January 1870;" and in another, they allude to the difficulty of obtaining any returns at all from asylums. We make the following extract from the Report:—

"In previous reports we have stated that there are many points of statistical interest, embracing, among others, the civil condition of the patients, their occupations, their ages at the period of attack, the causes and forms of their mental affections, the duration of the malady at the date of admission, and the intervals between successive attacks, which we would gladly have brought under review had the materials at our command been sufficient for the purpose. But we thought it better to abstain from any such attempt, than to make statements that rest on no sufficient basis. It may be well, however, to illustrate by some examples, the imperfect nature of the data for statistical purposes which are supplied to us from asylums, and on which alone our conclusions could be founded. Materials which would illustrate the causes, progress, and termination of the various forms of insanity, are possibly to be found in asylum registers and case-books; but such materials do not of necessity come under our observation; and besides, they could only be safely made available by the asylum officers who had had the cases under their care. There are some points, nevertheless, on which we might throw some light without much risk of serious error; as, for instance, on the number of epileptics, of patients affected with general paralysis, or of patients labouring under certain other forms of nervous disease; or on the comparative ages of patients in different asylums. But even this information we could obtain only by special returns from each asylum, and by the courtesy of the asylum officers, who are not required, by statute, to furnish it. We gladly take this opportunity of acknowledging the readiness with which applications made by us for non-statutory returns have been met by asylum superintendents; but we have a natural hesitation in making calls upon them which must occupy a good share of their time, and more or less seriously interfere with their own special duties."

As an instance of the difficulty which the Commissioners experience, let us cite the following case:—A patient was twice admitted into an asylum on the following terms:—"On the first admission the first medical certificate indicated mania, the second indicated melancholia, and the medical report diagnosed dementia. Then in a few months the patient is discharged recovered. On her second admission, the first medical certificate indicates mania, the second, dementia or idiocy, while the medical report diagnoses moral insanity. It would be extremely difficult, if not impossible, to decide from these materials under what form of insanity the patient should be classified."—P. xxi.

Now, it is quite possible that the six certificates which are alluded to above were all accurate descriptions of the condition of the patient on the occasion of each examination, indeed the first three might happen any day, but we think the case is rather an argument for better opportunities for the proper study of insanity than for increased powers to the Board of Lunacy. However, it is an unseemly sight to see such respectable gentlemen as those who form the Board scampering over the country after refractory inspectors of poor, and sending round the hat for asylum statistics.

We have already passed the ordinary limits of a review of a blue-book, but let the great interest which the Commissioners in Lunacy contrive to infuse into theirs be our excuse. They give on every page such evidence of keeping themselves *en rapport* with the freshest opinions of the day, that our difficulty is to select where all is so good. For instance, in a few sentences on insanity itself, how neatly they epitomize the labours of the last ten years!—"There is," they say, "no such disease as insanity. There are various affections of which unsound mind is a symptom, but the removal of such mental unsoundness must be dependent on the restoration of the healthy functions of the organs on which it depends." This is an admirable summary of the prevailing theory of the day, of which Dr Skae was the originator. The only objection to the theory itself is, that while Dr Skae has had several able disciples, there have been not a few who have ridden it to death, and have brought it into some disrepute.

We should have gone with great pleasure into the discussions which the Board raises on the subject of the habitual drunkard and criminal lunacy, but we have already exceeded our proper limits. Suffice it to say, that the article on the former subject is carefully written, and shows extensive experience of the insane at large and in private dwellings, while the remarks on the latter are open to question in several particulars, on which we should have been delighted to break a lance, had our space permitted.

A System of Surgery, Theoretical and Practical, in Treatises by various Authors. Edited by T. HOLMES, M.A. Cantab., etc. Second edition, in five volumes. With illustrations. Vol. V.:—Diseases of Genital Organs, of Breast, Thyroid Gland, and Skin; Operative Surgery; Appendix of Miscellaneous Subjects; with a General Alphabetical Index and List of Authors. Pp. 1131. London: Longmans, Green, and Co. 1871.

THE first part of this volume to which every reader will turn, is the completion of the article on the Process of Inflammation, by Dr Burdon-Sanderson, which was begun in the first volume by Mr Simon.

The immense changes in the views of the pathology of this process due to the labours of pathologists (chiefly German) in the last ten years necessitated a complete revision of the subject, while it placed a vast number of strange and new pathological experiments before the view of any one wishing to be familiar with the most recent investigations. Dr Sanderson endeavours, with considerable success, to place before English surgeons a succinct account of the more important of these experiments, and also, perhaps less successfully, to give them an idea of how far these results are to be accepted either as destructive of former views, or as materials of a new philosophy.

The purpose of the article is to describe the effects of injurious irritation of tissues under two heads. 1. Disorders of the circulation; changes having their seat in the bloodvessels. 2. Alterations of tissues. The improvements in experimenting, the mesentery of a *curarized* frog being substituted for the web of an undrugged one, have changed some of the views formerly held as to whether dilatation or contraction of an artery is the first morbid change. Increased knowledge of the innervation of the vascular system has established the doctrine that all vascular nerves pass through the ganglionic nervous system. The experiments of Ludwig and Lovén give the important result "that all arteries manifest alternating states of contraction and dilatation, their rhythmical movements being entirely independent of those of the heart and of breathing, and ceasing when the vessel is paralyzed by division of its nerves. These experiments are briefly related. Excitation of the central end of a divided sciatic causes acceleration of the circulation. This has been proved by Stricker and Riegel by beautiful experiments, in which they compare the current in a given artery with a current through a tube fixed on the eye-piece of a microscope, the velocity of which current is known, and can be varied at pleasure. However, our increased knowledge of innervation of bloodvessels is still too imperfect to enable us to harmonize facts.

The varying effects of certain familiar irritants on the circulation are then noticed—the effects of ammonia being still remarkable and inexplicable.

Exudation of liquor sanguinis and *leucocytes* are next considered. Credit is given to Dr C. J. B. Williams, to Dr Addison, and specially to a less-known man, Dr Augustus Waller, for having so long ago as 1846, under many disadvantages, anticipated, to a great degree, the now famous investigations of Cohnheim, on the subject of white corpuscles or lymph corpuscles, or (as Dr Sanderson now prefers to call them) leucocytes, and their wanderings through the coats of the smaller bloodvessels.

The natural history of the gigantic amœbæ, Plasmodia, of the Myxomycetes, and of Cienkowski Vampyrella, show that they possess motion and growth, along with a considerable power of absorption, and leads up to a description of the remarkable observations of Recklinghausen, which commence a new era in histology, by showing that the leucocytes resemble amœbæ in having individual movements, absorptive powers, and locomotory habits. The enormous patience necessary for the discovering and demonstration of these facts is shown in the following description of the process:—

"The vein, in an inflamed part, is observed to have its wall lined with a continuous pavement of leucocytes nearly motionless. The eye must now be fixed on the outer contour of the vessel, from which here and there minute colourless button-shaped elevations spring, just as if produced by budding out of the wall of the vessel itself. These buds increase gradually and slowly in size until each assumes the form of a hemispherical projection corresponding to a leucocyte. Eventually the hemisphere is converted into a pear-shaped body, the stalk end of which is still attached to the surface of the vein, while the round part projects freely. Gradually the little mass of protoplasm removes itself further and further away, and, as it does so, begins to shoot out delicate prongs of transparent protoplasm from its surface, in nowise differing in their aspect from the slender thread by which it is still moored to the vessel. Finally, the thread is severed and the process is complete; the observer has before him an emigrant leucocyte."—Pp. 752-3.

But our space forbids prolixity; so we must hasten on. Under the head of "Stasis," the remarkable experiments of Ryneck of Gratz show that the presence of blood is not necessary, for he has shown that all the phenomena of stasis can be produced by irritation in the webs of frogs, in which milk, or the defibrinated blood of mammalia, has been substituted for the circulating fluid.

Under the head of "Structural Changes in the Capillaries," Stricker has shown that they are not merely passive tubes, but contractile, and also exhibit remarkable powers of union with each other in wounds by outgrowths and budding; also that probably they have the power of reunion after separation, as if no severing had taken place.

To the second part, regarding the changes which take place in the tissues, we can only allude very briefly, and must refer to the original accounts of the researches of Cohnheim and Recklinghausen, Stricker, and Norris. These are put in a simple form before the English reader, and illustrated by excellent woodcuts.

The following are his conclusions:—

"1. In every inflammation which attains its full development, the changes which manifest themselves in the inflamed part are of three kinds, distinguished from each other according to the organs which are concerned in their production. They are either (1) effects of disorder of the vascular nerves and centre; (2) effects of alteration of the properties of the living walls of the capillaries; or (3) effects of the stimulation of the living cells by transudation of liquor sanguinis.

"2. Of these three orders of phenomena, the second only can be regarded as absolutely essential to the existence of inflammation, which may, therefore, in the strictest sense, be said to have its seat in and about the veins and capillaries, it being there that the earliest and most constant effects of irritation or injury manifest themselves.

"3. The nervous and vascular effects of local irritation cannot be directly described as successive stages of one process; for the determination of blood to the seat of injury, which is the sole result, and, if I may so speak, purpose of the vaso-motor disturbance, has no relation to the local vascular changes, excepting in so far as it tends to make the exudation more abundant. Exudation of liquor sanguinis, although favoured by increased arterial afflux, may occur without it, and, as a rule, continues after the afflux has ceased. The vascular and textural changes, on the contrary, may be regarded as successive stages of one process, for they are connected by a causal relation—the exudation of liquor sanguinis, in which the former ends, being the determining cause of the latter.

"4. The mode in which an injury changes the living substance of the vascular walls so as to make them permeable to the blood is unknown. The nature of the change itself is also unknown; the only clue which we have to its character being that afforded by the structural alterations to which it leads in certain organs, and particularly by those which are observed when the process of separation, attended with the formation of new capillaries, is commencing. From these appearances we are led to infer that the primary change consists in the transition of the material from the formed to the plastic condition—from a state in which it is resistent, because inactive, to one in which it is more living, and therefore more labile.

"5. In all living tissues the effect of inflammation manifests itself in a modification of the action and properties of individual cells. In cells which form part of permanent structures, the protoplasm increases in quantity, and becomes more or less contractile. Subsequently it is converted entirely or partly into young cells, either by cleavage or by endogenous germination."

The article concludes with a few noble paragraphs by Simon on the destructive effects of inflammation, which appeared in the first edition.

We have left no room to discuss in detail the other articles in this volume, most of which are amplifications of those in the original editions. Professor Lister has given a full account of the most recent plans of using his antiseptic precautions in his article on Amputation. More than 160 woodcuts greatly increase the value of this edition, and the publishers' and editor's duties have as before been admirably performed.

The Diseases of Children. By FLEETWOOD CHURCHILL, M.D. Dub. and Ed., M.R.I.A.; and FLEETWOOD CHURCHILL, Jun., F.K. & Q.C.P., etc. Third edition. Dublin: Fannin and Co.: 1870. Pp. 900.

On Some Disorders of the Nervous System in Childhood. By CHARLES WEST, F.R.C.P., etc. London: Longmans, Green, and Co.: 1871. Pp. 136.

THE latter of the two works whose titles we have quoted above, constituted the Lumleian lectures delivered at the Royal College of Physicians of London in March of this year, and therefore comes before us with somewhat higher pretensions to authority than the unpretending manual of the Messrs Churchill. These Lumleian lectures were founded by Richard Caldwell, Doctor of Medicine, and John, Lord Lumley, who, in 1572, executed a joint deed laying a perpetual rent-charge on their lands for the foundation of these lectures. Little is known of Caldwell beyond the facts recorded that he was examined, approved and admitted into the Royal College of Physicians, and appointed Censor, all in one day, being also chosen one of the Elects in less than six weeks afterwards. He was of middle age when he joined the College, and was already in failing health when his benefaction was bestowed, for in the same year he was specially excused on that score from attending the meetings of the College, and two years afterwards he died. Lord Lumley, however, survived his friend nearly forty years, not dying till 1609. The character recorded of him by Camden is, "that he was a person of entire virtue, integrity, and innocence; and in his old age a complete pattern of true nobility." In his earlier years, however, his nobility was not so marked, for we find him first intriguing to rescue our Scottish Queen and place her on Elizabeth's throne, and afterwards we find him on the commission for the trial of her whom he had pledged his knightly word to serve; and we subsequently meet with his name in connexion with some of Elizabeth's worst judicial tyrannies. Peace to his ashes! Lumley and Caldwell's joint lectureship was that in which a greater than either—William

Harvey—first brought before the profession his great discovery of the circulation of the blood. For the sake of the benefits he has indirectly brought us, we as a profession may surely be to Lumley's faults political a little blind. Dr West's lectures are not likely to exert such an important influence on the progress of medicine as Harvey's, but the influence which they will assuredly exert will certainly tend to the advancement of medicine in its application to the diseases of childhood; and we have no hesitation in saying this in spite of the fact, that in the only disease in regard to which he has entered somewhat fully into treatment—chorea—we dissent from the principles laid down, and feel bound to warn most strongly against the use of a remedy which Dr West recommends most highly—tartar emetic. In childhood this is always a hazardous remedy. Dr West himself states that it must be employed with caution, yet he has not hesitated to push it to the amount of nine grains in the day. Dr West adds, that he is not acquainted with any death which could be fairly attributed to the antimony, though his saying so exhibits his own misgivings, which we confess we share, while he also adds that he has seen at least one death following its use, from apparently causeless exhaustion. And this feeling we do not share; for fatal exhaustion following such doses of antimony in a child could scarcely, we think, be justly called causeless, though no vomiting or purging were present, and though the finger should fail to detect any change in the pulse up to the moment of commencing death. Gillette's tartar emetic treatment we regard as scarcely less dangerous than Trousseau's strychnia treatment. Tartar emetic is, besides, not known to act as a special sedative of the nervous or muscular systems, though its secondary effects on both are sometimes sufficiently alarming; and even in those cases of chorea in which "the movements seem to constitute the disease, and in which there is no special indication to guide us," we should certainly try not tartar emetic, which is dangerous, nor henbane, conium, or belladonna, which are useless, but Indian hemp, or specially the Calabar bean and chloral —the first of which has occasionally proved useful; the second, which has been frequently so, and has, moreover, an undoubted effect on the nervous system; while the latter has not only proved curative in itself when given freely in full doses, but also invariably produces sleep and rest from the distressing movements, thus, at the worst, giving time for the action of other remedies, among which we may give a prominent place to arsenic, the use of which is not even alluded to by Dr West, in spite of the commendations bestowed on it by the late Dr Begbie, who states that he invariably found its employment successful—a commendation which has been joined in by other men of large experience, and in which we ourselves agree.

Dr West regrets that he has been forced into a speciality; but when that speciality consists in the treatment of the diseases of by far the larger, and for many reasons the more interesting, part of the human race, regret seems to us by no means the right word to employ—rejoice would seem more suitable from every point of view. And we certainly rejoice to find that Dr West reveals in almost every page proofs that his large experience has been duly cultivated. In almost every page we find exhibited that intimate acquaintance with child-life, and the influence of disease upon its bodily and mental manifestations, which, to our thinking, is somewhat rare, and could only be acquired by a philosophic generalization based on extensive experience. Dr West's language is perhaps slightly more poetical than we are accustomed to in medical treatises; but this is excusable under the circumstances in which the work was produced; and, while not detracting from the truthfulness of its descriptions, it adds greatly to its general attractiveness. Where all is so interesting it is perhaps invidious to particularize his remarks on the various forms of infantile paralysis, on loss of speech in childhood from various causes, and on the mental peculiarities of chilhood—all of which reveal the hand of a master.

As a sample of the beauty and truthfulness of Dr West's writing we may give the following quotation, which embodies much that we ought never to forget, and, in a few words having relation to childhood, contains principles applicable to all ages:—"No one can have watched the sick-bed of a child without remarking the almost unvarying patience with which its illness is borne, and the extremity of peril from which, apparently in consequence of that patience, a complete recovery takes place. Much, indeed, is no doubt due to the activity of the reparative powers in early life, but much also to the unruffled quiet of the mind. No sorrow for the past; no gloomy foreboding of the future; no remorse, disappointment, nor anxiety depresses the spirits and enfeebles the vital powers. The prospect of death, even when its approach is realized—and this is not so rare as some may imagine—brings in general but small alarm. This may be from the vagueness of the child's ideas; it may be, as the poet says, that in his short life's journey 'the heaven that lies about us in our infancy' has been so much with him that he recognises more clearly than we can do

'The glories he hath known,
And that imperial palace whence he came.'

I dwell on this truth, because it is of great practical moment that we should bear in mind to how very large an extent the child lives only in the present; because it follows from it that to keep the sick child happy, to remove from it all avoidable causes of alarm, of suffering, of discomfort—to modify our treatment so as to escape a possible struggle with its waywardness; and even if death seems likely to occur, to look at it from a child's point of view, not from that which our larger understanding of good and evil suggests to our mind,—are duties of the gravest kind, which weigh on the physician, on the parent, on the nurse, and which it behoves us none the less to remember because they are not dwelt on in the lecture-room or in the medical treatise.

"One word, and but one, I would add here, and I trust I may do so without incurring the suspicion of want of respect for religion, or of want of faith in its doctrines. Some of the most painful deathbeds I have ever witnessed have been those of children whose over-anxious friends have striven to force upon their minds the deepest verities of our faith, in that definite form in which they are embodied in catechisms and formularies. It is easier to frighten than to console; the dark grave is realized, or at least imagined, more vividly than its Conqueror; and the little child, driven to look within for the evil which it does not know, and cannot find, but vaguely dreads, and would be sorry for if it knew it, has moved me to compassion only less than that I felt for its broken-hearted torturers, who have failed to learn that the little children—of whom our Saviour said that of such was His kingdom—were not called on to recite any creed, to profess any faith; but, just as they were, in their helpless ignorance, were deemed fit to be folded in His embrace, and to be held up to us as our example." With these sentiments so beautifully stated, we beg to express our entire concurrence, and to point out that they have been partially, though not inaptly, forestalled by the late Miss Adelaide Procter in describing a mother with her dying child:—

> "Nay, his very mother's pain,
> And the mighty love within her,
> Could not give him health again.
>
> So she knelt there still beside him,
> She alone with strength to smile,
> Promising that he should suffer
> No more in a little while,
> Murmuring tender song and story
> Weary hours to beguile.
>
> Suddenly an unseen presence
> Checked those constant moaning cries,
> Stilled the little heart's quick fluttering—
> Raised those blue and wondering eyes."

We are too apt to forget that even the inevitable and recognised approach of

> "That shadow cloaked from head to foot,
> Which keeps the keys of all the creeds,"

does not absolve us from the discharge of our final duty to our patient—to promote his euthanasia. It is even more difficult to conduct our patient gently to the brink of Jordan than to cure him, when that is possible, yet it is not the least important part of our duty to him. However interesting, the subject is too wide and too important to be entered on more at large here, but one phase of it may be aptly shown in the faint reply of the dying Lincolnshire boor to the clergyman who was pressing on his attention certain doctrines which have presented difficulties to cleverer heads under more favourable circumstances:—"Wat wi' faath, and wat wi' the earth a turning round the sun, and wat wi' the railroads a fuzzin and a whizzin, I'm clean muddled, stonied, and bet."

As the Manual of the Messrs Churchill has already reached its third edition, it may be regarded as beyond the pale of criticism, and we can only say that we trust it has been more often bought than read, and more often read than acted upon. Bloodletting, leeching, and calomel, which are on almost every page recommended for almost all the ills to which the flesh of childhood is heir, are not quite the remedies most recommended by the authorities of the profession in this latter half of the nineteenth century. Neither Sydenham nor Latham are authorities to be implicitly trusted, in this respect at least; and in a work upon the treatment of any class of diseases we require something more nowadays than a mere *rechauffé* of the opinions of others. An author who lays down principles may not be always a safe guide, but he appeals to faculties which are capable of correcting his errors, while one who plunges us amid a quagmire of so-called authorities without a clue to guide us in the right direction, cannot but be a most dangerous guide to the young and inexperienced; and as it is chiefly those who appeal to a manual such as the one before us, it is only our duty to warn them that, in regard to treatment at least, it is quite half a century behind the age.

On Bone-setting (so-called), and its Relation to the Treatment of Joints crippled by Injury, Rheumatism, Inflammation, etc. By WHARTON P. HOOD, M.D., M.R.C.S. London and New York: Macmillan and Co.: 1871. Fcap. 8vo, pp. 156.

DR HOOD has, by the publication of this little volume (which first appeared in the columns of the *Lancet*), conferred a very great boon on the profession. With the exception of Sir James Paget's lecture on the cases that bone-setters cure, published some years ago, scarcely anything will be found in professional literature regarding the subject, which, though unpleasant and sometimes unsavoury, is one of considerable importance. For, making the fullest possible allowance for quackery, lies, imposture, and the imagination of patients, it cannot be denied that there are cases in which the manipulations of uneducated bone-setters have done good in cases where surgeons had failed to cure.

Dr Hood has had special opportunities of knowing what bone-setters think they do, and how they do it; and in this volume he gives the *modus operandi*, and a theory of his own, which he thinks, and we believe rightly, is capable of explaining the fortunate results in many cases, and of giving a reasonable anatomical explanation of these results. To obtain good out of things evil, to separate grains of wheat from chaff, is a good and worthy object, and we think well attained in this instance.

The chief pathological phenomenon described is the formation of abnormal adhesions between articular surfaces or in ligaments. Movements make these tense, and cause pain, which is generally referred to one particular point. On this the bone-setter fixes his attention, and during his manipulations presses on this point with great strength. While doing so, he by various twisting movements of the joint puts the muscles off their guard, and then, by sudden and forced flexion or extension, ruptures the new adhesion or false ligament. This operation is generally attended by a crack or snap. This, he says, is the dislocated "small bone" going into its place; but the patient is really relieved, accepts the explanation, which any educated man knows to be false, goes off, and brags of his cure. So the bone-setter's fame spreads, and surgery is at a discount.

Some very striking and interesting accounts of such cases by the patients themselves lend interest to the book, which is nicely written. We have no doubt that it will do good not only to patients but to surgeons.

A Manual of Practical Therapeutics, considered chiefly with reference to Articles of the Materia Medica. By EDWARD JOHN WARING, M.D., F.L.S., etc. Third edition. London: J. and A. Churchill: 1871. Pp. 875.

THIS work was originally published in 1854, and compiled, as the preface to the first edition states, at Mergui, a small isolated station in the Tenasserim provinces, where works of reference could only with difficulty be procured, often requiring to be specially imported from Europe; and it forms a lasting memorial of the author's patient perseverance and painstaking accuracy, as well as an encouragement to others to carry out with diligence whatever they may undertake, recognising difficulties only as obstacles to be overcome, assured that they shall certainly reap their reward. This third edition has been considerably modified—the articles on antimony, calomel, and bloodletting now occupying much less space than formerly, while chloral, apomorphia, bromide of mercury, and other new remedies have been introduced, and larger notice taken of bromide of potassium, Calabar bean, carbolic and sulphurous acid, and such other medicines as, though not strictly new, have yet in recent times acquired novel applications or increased importance as thereapeutic agents; while articles on the hypodermic and endermic methods of treatment have also been added. This work is not intended for students; it does not pretend to teach the science of therapeutics either generally or specially in regard to any given disease; it is simply a work of reference for the practitioner, who, when baffled in his treatment of any case, can, by consulting its pages, discover at a glance what other methods of cure have been adopted by others. A work of this nature has no pretensions to scientific eminence; but it may occasionally prove more useful than any more strictly scientific work. It commences with a short account of therapeutics—of the modes of ascertaining the therapeutic virtues of drugs; and this is followed by a notice of the art of prescribing, with an account of all the circumstances capable of modifying the action of remedies, their best mode of administration, etc. Then follow in alphabetical order all the various articles of the materia medica, with a short notice of all the special uses which have been made of each article, the name of the individual who has thus employed the drug, and a reference to his original paper. In the second part a more extended account is given of various medicinal agents and appliances—as anæsthetics, electricity, acupuncture, etc.; and the work is concluded by a copious index of diseases, under each head being placed the various drugs and appliances which have been employed in its treatment—those deemed most worthy of confidence being distinguished by an asterisk. It is obvious that a work such as this must be used with what Opie mixed his colours—" brains;" but with this proviso we commend it to our brethren.

The Student's Guide to Medical Diagnosis. By SAMUEL FENWICK, M.D., F.R.C.P., etc. Second edition, revised and enlarged. London: J. and A. Churchill: 1871. Pp. 236.

THIS little work is intended, as its title implies, mainly for the use of students, and it seems very well calculated to give a beginner a rough idea of the chief points to be attended to in making, or attempting to make, his diagnosis. An examination in clinical medicine being now generally required, books such as the present are in much demand, and probably none of the many such published is more suitable for a student's use than this one. At the same time it does not deal with any of the difficulties of diagnosis, and is, therefore, not so suitable for a practitioner as others we could name. *Even* for a student's use, we were about to say—but perhaps the word *specially* would be more applicable—there is a want of precision about some of the statements, which may lead to mistakes. Thus, in testing for sugar in the urine, the author tells you to add a few drops of a dilute solution of sulphate of copper, without specifying the strength or the number of drops, and then to add half as much liquor potassæ. In examining practically we have seen many mistakes made from this want of precision; and we think it would be better to say—to one drachm of urine in a test tube add one drop of a saturated solution of sulphate of copper and an equal quantity of liquor potassæ, when the precipitate which falls at first is immediately re-dissolved, the solution acquiring a brilliant blue colour, which is quite as good a sign of the presence of sugar as the reddish-brown precipitate which falls on boiling—this bright blue colour being never seen except when sugar is present, and the proportions mentioned being quite precise and certain to ensure the accurate attainment of the end desired. Also, we think, it would be well to warn against the fallacy of the yellow coloration occurring on boiling when the urine contains only an excess of uric acid and no sugar, and to point out that this fallacy, so commonly observed in diabetics on a strict meat diet, may be avoided by the use of the test in the cold, no change then taking place from the presence of uric acid, while sugar acts just as powerfully, though not so rapidly, as a reducing agent. Or if time be of moment, then, in such cases, Böttcher's bismuth test ought to be adopted, which, in the absence of albumen, is thoroughly reliable. A stencil plate would also be a great improvement on the carbon paper, as the pattern diagram soon gets worn out; but we much prefer lithographed diagrams, which can be gummed on the back and stuck into the note-book when required.

Our Baths and Wells: The Mineral Waters of the British Islands, with a List of Sea-Bathing Places. By JOHN MACPHERSON, M.D., etc. London and New York: Macmillan and Co: 1871. Pp. 206.

IT is now seventeen years since Dr Macpherson, in his treatise on the Mineral Waters of India, first exhibited his leaning towards balneology. Since then his "Baths and Wells of Europe" have made his name well known throughout this country as an authority in this matter; and the little work we have now to do with will not decrease his reputation in this respect. It is pleasantly and lucidly written; contains in small compass the essence of what we require to know in regard to the springs most in use, besides a great deal of interesting antiquarian information in regard to them. It is no bookmaker's production, but one written for love of the subject and a desire to supply a want very generally felt; and this it does very efficiently. There is, so far as we know, no other work which gives a general survey of all the springs and bathing-places of Britain; these have been only too much neglected for the more numerous and generally more powerful ones of the Continent. And yet this, we think, is a great mistake. Some of the Continental springs are, no doubt, unrivalled, but for others we have no mean substitutes here; while for an invalid we believe the advantage to be derived from a residence in the comparatively equable summer temperature of these islands is far preferable to exposure to the broiling temperature of many of the German spas during the fashionable period. During autumn the line of greatest health in Europe passes through the Highlands of Scotland, as in winter it skirts the Mediterranean; and if in the latter season it is an advantage to send our invalids south, it may come also to be considered an equal advantage for southern invalids to summer with us, especially if we can offer them any advantages in the shape of spas. Most of our British mineral waters are, however, too little known; and all are so wretchedly supplied with all that makes an invalid life comfortable or tends to renovate it, that any work which directs general attention to the subject ought to be welcomed, and every effort ought to be made to improve their natural advantages. In the whole of Britain there is not such a thing as an efficient douche-bath or a man capable of applying it. In all Edinburgh and its neighbourhood—the very cynosure of all eyes for beauty—we have no efficiently-supplied bathing establishment. We can, indeed, learn to swim at Pitt Street at the risk of swallowing lots of the essence of ragged schools, or get a hot salt-water bath at Trinity or Seafield; but there is little comfort or convenience at either place, and a good douche is simply unknown, though much wanted. Quite recently an admirable chalybeate spring—a carbonate of iron—has been discovered at Moffat, which is quite equal in strength and pleasantness to any European spring, while the situation is unrivalled for healthfulness and beauty. Let us hope that every endeavour will be made to utilize this spa and to make it an attraction to our own and even to foreign invalids. A spring equal to Spa, and almost equal to Schwalbach, in the immediate vicinity of Abbotsford and Dryburgh, and in the healthiest part of all Europe in the summer, ought to be a fortune to its possessors. We are, however, progressing. There are now bathing-machines, not only at North Berwick, but even at Leven—a place too insignificant to be noticed by our author, and which yet possesses many attractions. It has a beautiful beach, a good supply of excellent water; it is well drained, and has good links for golfing, besides being in the neighbourhood of many interesting objects—among others, the Wemyss Caves, with their very remarkable aboriginal carvings, to which Sir James Simpson has directed attention. We doubt if the epithets, "quiet and comfortable," are exactly applicable to Portobello, now that it has got its pier; but its vicinity to Edinburgh and beautiful beach will always make it attractive. We cordially commend this book to our readers as likely to be useful; and we hope that our author will soon have occasion to give us a new edition, which, we trust, will be much enlarged, as full and precise information on our own springs and health-resorts is very much wanted, and directing attention to them is the best way of getting them improved.

Handbook of Dental Anatomy and Surgery, for the Use of Students and Practitioners. By JOHN SMITH, M.D., F.R.S.E., F.R.C.S.E. Second edition. London: J. and A. Churchill: 1871. Pp. 176.

THIS little work has already been favourably reviewed in our pages (Feb. 1865, p. 736). To what we have there said there is little to be added, except to say that the present edition is an improvement on the former one, being brought quite up to date, while it has an additional chapter on the principles involved in the mechanism and use of artificial teeth, which renders it somewhat more complete as a treatise on dental surgery. The diseases and accidents which happen to our teeth, and the best modes of repairing them, are matters continually forced upon the attention of the youngest of us by the necessities of our fellow-men, while advancing age brings the matter more directly home to almost all of us. The principles involved in the extraction of teeth, and the disorders of dentition, are also subjects of the utmost importance, concerning which a practical knowledge is daily required, more or less, from us all, and especially from such of us as are engaged in the arduous toils of country practice. We know of no work better suited to convey useful information upon these points, while the chapter on the use of anæsthetics in dental surgery is specially instructive.

Camp Life as seen by a Civilian: A Personal Narrative. By GEORGE BUCHANAN, A.M., M.D. Glasgow: James Maclehose: 1871. Pp. 298.

Parisiana: The Real Truth about the Bombardment, etc. By CAMERON STUART MACDOWALL, L.R.C.P. Ed., M.R.C.S., etc. London: Provost and Co.: 1871. Pp. 141.

RECENTLY we have supped full of the horrors of war, and the remarkable events of the past year have paled even the glories of the Crimea, and helped to obliterate the recollection of all that was disastrous in that memorable campaign. And yet those of us who remember that stirring time can never forget that period of intense anxiety when, next to God, all our hope was in the French. We were then mercifully preserved from that disastrous fate which has recently overtaken our gallant allies; but our loss was sufficiently great, and our mourning for our fallen heroes widespread enough, to enable us to sympathize deeply with our neighbours, who have been, in recent times, still more severely tried. The memory of these times has still a halo of interest around it; and Dr Buchanan's diary, though a little out of date, still contains much that is of interest to the mere general reader, and even some things to be pondered over by those more immediately concerned with the wellbeing of our armies. Since the days of Waterloo there has been no more eventful period of British history than the Crimean campaign; and though our author's connexion with that campaign was but limited in point of time, he, with the eyes of an outsider, saw many things which escaped the ken of those more immediately engaged. "Camp Life" is pleasantly written, and is well fitted to wile away an hour or two of country leisure in these *dolce-far-niente* days.—"Parisiana" is written in a different style. All is stir and action, and the spasmodic sentences have a force in them to which we are somewhat unaccustomed. Yet, strange to say, all the horrors of the first siege of Paris by the Prussians, in which Macdowall so well played his part, have, in their turn, paled before the tenfold horrors of the *Commune* and the second siege of Paris by the French themselves, with its horrible culmination in incendiarism and assassination. So rapidly is history written, or rather lived, nowadays, that Buchanan's "Camp Life," though fifteen years old, is hardly more out of date than Macdowall's "Parisiana," though that is not yet six months old, and the ink with which it was written may be figuratively said to be hardly dry. "Parisiana" is, nevertheless, a most interesting record of the Prussian siege of Paris, while the mild egotism conspicuous on every page helps to lighten up the misery, the gloomy darkness of which is only too conspicuous.

Part Third.

MEETINGS OF SOCIETIES.

OBSTETRICAL SOCIETY OF EDINBURGH.

SESSION XXX.—MEETING XV.

Wednesday, 28th June 1871.—Dr BELL, *President*, in the Chair.

I. CASE OF HYDATIGINOUS OVUM.

Dr Rattray exhibited A SPECIMEN OF A LARGE HYDATID MASS, which had been expelled after the administration of ergot in drachm doses. Three doses were given with an interval of half-an-hour between each dose.

The patient, a lady of 33, has had three children. Dr Rattray was called in on 26th June, and found her pale, anæmic, and greatly reduced from hæmorrhage.

The case was rather difficult of diagnosis, but was treated as a threatened miscarriage by gtt. vi. tinct. cannabis Indicæ, thrice daily, and cold water enemata. On 27th, severe and labour-like pains supervened, and in a short time a large mass of hydatids was expelled, and what appeared to be part of a placenta remained adherent to the uterus. The patient became very weak through loss of blood; and, taking a serious view of the case, her husband, at my request, soon brought Dr Keiller to my assistance. He removed the adherent mass, she having been previously put thoroughly under the influence of chloroform. Recovery was speedy and good.

Four things are worthy of mention regarding this case:—

1. The patient considered herself four and a half months advanced in pregnancy.

2. She noticed that there existed a greater enlargement of the abdomen at the same period of gestation than in any of her former pregnancies.

3. Sickness continued both day and night for fully three months; whereas, in previous pregnancies, vomiting commenced as soon as she became *enceinte*, and continued for the first month, but only during the day.

4. In addition to severe headaches, she felt for several weeks as if a great oppression or weight had been laid on the top of the head.

Dr Keiller said that when he saw Dr Rattray's patient, she was in a dangerous state. He examined under chloroform in usual position, the hips well over the edge of bed, one hand making pressure over the uterus, the other introduced into the vagina, so as to get two fingers into uterus. He found a mass, which he removed by separating it from the uterus in three portions. There was little hæmorrhage when the degenerated structure was removed. He thought it very injudicious to leave any portion of placenta, if it can be helped, and alluded to the difference of cases in abortion. In natural abortion the ovum is dead, and nature expels the mass. In criminal cases the parts are comparatively normal, and take time to separate, and from this reason he considered criminal abortion was so frequently injurious.

Dr Cochrane concurred in Dr Keiller's remarks on danger of retention of placenta.

Dr Bell said such cases are sometimes attended with all the bad consequences of labour at the full time. He alluded to a case in which the patient fevered and died after the expulsion of hydatid mass.

II. CASE OF RETAINED PLACENTA.

Dr Keiller exhibited A PLACENTA which had been left in the uterus for some days, after what should have been the termination of a case. The patient was attended by a student, who said she had aborted, but hæmorrhage still continued. The woman, when Dr Keiller saw her, looked as if she was dying. He introduced his hand in the same way as in last case, although he thought she was past recovery. He found the mass projecting from the cervix uteri, and removed it. Ergotine had previously been injected under the skin to check hæmorrhage. Brandy and ergot by mouth were subsequently given. She rallied and did well. He does not remember having seen a woman so far gone from hæmorrhage, she being pulseless, recover. He alluded to another case, in which he suspected abortion had been attempted. The placenta was not expelled at the time, and she took pyæmia and died. Had the placenta been removed at the proper time, he thought she might have recovered. He also made remarks on other cases illustrative of the subject.

III. CASE OF CEPHALOTRIPSY. By *Dr Keiller.* To be alluded to at next meeting. Dr Keiller also alluded to another case, in which, when extracting a putrid child, the head was left in the uterus. It was extracted by the cephalotribe with great difficulty.

IV. ON THE USE OF THE CONSTANT CURRENT ON PAINS OF PELVIC ORIGIN. BY DR STEPHENSON.

(This paper will appear in a future number of the Journal.)

Dr Keiller thought the paper one of extreme interest, and referred to the attention paid by our Continental brethren to the application of the constant current. We used electricity spasmodically, which was objectionable. What Dr Stephenson recommended was its too continuous application. Dr Keiller suggested that a committee be appointed to investigate and report.

Dr Gordon thought the reason why electricity had not succeeded in this country was, that we used the interrupted and not the continuous current. He thought Dr Stephenson's observation very important.

Dr Stephenson, in reply, said that a great point in applying the current was to send it through the affected nerve. What is wanted for success is a current of low tension and large quantity; and said he would be happy to treat any cases under supervision of medical attendant, at his own house, without fee, and to give any of the Fellows any information he could regarding this method of treatment.

Dr Gordon thought no further evidence was necessary of the good effects of the remedy, after hearing the case narrated by Dr Stephenson.

Part Fourth.

PERISCOPE.

TREATMENT OF HIP-JOINT DISEASE, by LEWIS A. SAYRE, M.D.—We subjoin, for the benefit of those of our readers who have not seen the original lecture,[1] the following abstract of its chief points of interest. We cannot abstract its vigour and enthusiasm.

[1] British Medical Journal, 22d July 1871.

In a brief introduction, he gave his views on the *anatomy* of cartilage, alluding to its low vitality, carried on by attachment and absorption; its tendency to disintegration and death; also to the low vitality of the ligamentum teres. He believes that the disease may commence either in the synovial membrane or the ligaments, or in the network of bloodvessels directly beneath the cartilage of incrustation. The *pathological changes* are as follows:—

1. Synovial inflammation, followed by effusion—this being generally the result of exposure to over-exercise or sudden change of temperature.

2. Wrenches or tears of the ligamentum teres—nearly always followed by a destructive inflammation of the bones of the joint. The smaller the amount of the tear, the greater the ultimate danger, as it is less attended to.

3. Concussion or blow producing a blood-blister or extravasation into the delicate network of vessels immediately below the cartilage. If this is at once detected, and rest insisted on, no harm need follow. Even an extravasation under the skin, which, if let alone, will soon get well, will turn into a sore if constantly irritated.

These three varieties of cause have certain differences in symptoms in early stages. Thus: *effusion* is always accompanied by a peculiar distortion—the result of the unfolding of the capsule of the joint, especially the ilio-femoral ligament. The distortion is, the limb is flexed, abducted, and rotated outwards; in later stages even fixed, as if moulded in plaster-of-Paris. The next change in every inflamed joint is atrophy of muscles above and below, with reflex irritation and consequent muscular contraction, and pressure of the joint surfaces against each other. Thus, in diseased hips, the muscles flex the limb, and would adduct, did not the capsular distention prevent it; hence, adductor muscles are found intensely contracted and tight. This is shown by the following experiment. If you take a dead body and flex the joints so as to break up the rigor-mortis, and place it on the back, so that both limbs are in their natural position; if you now bore a small hole through the ilium into the acetabulum, and forcibly inject a small amount of quicksilver, it will cause the limb to flex, abduct, and rotate outwards at the hip-joint. By driving into the hole a small piece of wood to retain this increased fluid within the joint, you will find it impossible to extend, adduct, and rotate the foot inwards without rupturing the capsule; and the attempt to do so, if the capsule do not rupture, will force out your plug like a pellet from a popgun.

It is the struggle between irritated muscles and distended capsule that causes the pain in the *second stage* of the disease—the night spasms being caused by the muscles asserting their power whenever released from the control of the will by the patient's dropping asleep; and exhaustion of vitality ensues from the constant necessity for watchfulness. To relieve this pain you may cut the tendon, or tap the distended joint: nature relieves it by ulceration and consequent rupture of the capsule; but while the child is relieved, the disease has only progressed. The *third stage* is now reached, of effusion into the cellular tissue. A marked change in the attitude now takes place, adduction, inversion of the toes, and apparent shortening of the limb. Then, later on, come the changes in the head and acetabulum, which are not those of luxation as generally described, but absorption both of the head and acetabulum, and slipping upwards of the capsular ligament, which, however, still embraces the head of the femur.

So much for pathological changes; next as to causes. The great error is to regard it as a local manifestation of a dyscrasia or blood disease connected with scrofula or tubercle. It is a *local* disease. Out of several hundred cases observed, and whose history has been traced, 90 per cent. have been in robust, healthy, wild, harum-scarum children. Delicate children take care not to be hurt. Often a very slight injury is the foundation of the mischief, from it not being attended to.

In examining the child, remove every stitch of its clothes. In the diseased side you find the gluteo-femoral fold of nates a little dropped down; the toe turns out, the knee and hip bend; and to careful measurement the affected thigh is already smaller. You then lay the child perfectly flat on a table. If normal, lines from sternum to symphysis pubis, and from one anterior superior spine to another, cross at a right angle, and both popliteal spaces can touch the table. If diseased, and in the stage of effusion, the one leg would be flexed, rotated outwards, and *ab*ducted; if the capsule has been ruptured, the diseased leg has been *ad*ducted, and is inside the central line. Moderate steady extension of the thigh on the pelvis prevents pain on movement; so that you can see that the joint is not anchylosed. While, on taking off the extension and allowing the muscles to contract, you at once reduce pain and produce a state of artificial watchful anchylosis. If the limb be handled properly, and slight extension made, the child can be moved without giving her pain; but the instant extension is taken off, the anchylosis again begins. Pressure causes absorption both of head of bone and acetabulum; absorption will result either in abscess or anchylosis. Artificial extension is the proper treatment. For ordinary night extension by splint or weight, the plaster is to be applied from the ankle to a little above the knee, on both sides of the affected limb. The plaster should be put on without being heated, and very carefully arranged so as not to be puckered, and then fixed by a roller with a stirrup of webbing, to which the buckle for the extension is to be fastened.

For day extension, an instrument consisting of vertical steel rods playing one within the other, and fixed by a key at the requisite level, makes extension from the lower end of the thigh to the crest of the ilium; a perineal pad is attached to the portion of the instrument pressing on the crest of the ilium, so that the patient rests his weight not on the hip but on the perineum.

The advantage of this plan is that the joint can be moved, anchylosis is prevented, and yet pain is removed. Many months may be required for the treatment, and if rest is persevered in all this time, the ligaments previously unaffected may become diseased as a result of the rest. If the disease has gone on to abscess and sinuses, resection of the joint is necessary. The only thing special in Dr Sayre's resection is, that he saves the periosteum as much as possible, and removes the bone freely.

DIGITALIS, ITS USE AND ACTION.—In the Hastings Prize Essay for 1870, which has just been awarded to Dr J. Milner Fothergill, the author has entered somewhat fully into the mode of action and uses of digitalis, especially as applicable to the treatment of cardiac disease. By experiment on fishes, birds, and frogs, Fothergill found that the action of digitalis was to produce firm contraction of the ventricle, which ultimately arrested circulation, and produced death. Similar results have been obtained in mammals by Handfield Jones and Fuller. On contrasting the action of aconite with that of digitalis, it was found that while digitalis produced fatal contraction, aconite produced fatal dilatation; and that when the one was employed as an antidote to the other, aconite had little dilating effect on the heart contracted by digitalis, but digitalis had a powerful and well-marked effect on a heart almost brought to a standstill by the poisonous dilating action of aconite. Belladonna was found to have a somewhat similiar effect, producing marked contraction of the heart; caffein acted also similarly, but in a less degree than belladonna; while strychnine seemed to have no action whatever on the heart, of frogs at least.

The motor power of the heart is under the control of the minute cardiac ganglia, each with a morsel of muscular fibre under its charge. These are alone capable of carrying on the action of the heart, but only in a tumultuous and irregular manner; but these irregular contractions are co-ordinated into a uniform peristaltic movement by the influence of the vagus (Von Bezold). This vagus influence may also be regarded as inhibitory; thus, in the normal condition, it only delays contraction till a sufficient amount of distention is obtained to permit the contraction to go on uniformly; but when this action is anormally increased by any stimulus, such as electricity, cardiac contraction is retarded, and if the stimulus be powerful enough, may be arrested in a fatal diastole.

Besides these, we have also two other nerves, the accelerator and depressor of Cyon, Claude Bernard, and others, which also play important parts in relation to various forms of cardiac disease, but which seem to have little connexion with the action of digitalis.

Traube supposed that digitalis acted on the heart by paralyzing the pneumogastric nerve; but besides other objections to this theory, section of the vagus—and the most complete paralysis could not be more effective than section—only produces death slowly by hepatization and disorganization of the lungs, but digitalis kills by arresting the heart's action primarily. On the other hand, Dybbowsky, Pellican, Handfield Jones, Fuller, and others have regarded digitalis as acting as a stimulus on the cardiac ganglia, and thus producing increased muscular action; and this theory is adopted by Fothergill, who enters into the arguments *pro* and *con*. Further, digitalis acts not only on the heart, but also stimulates to contraction the muscular fibres of the small arteries, thus producing increased arterial tension. It follows from this view of the action of digitalis that there results from its use—

1st, Increased and more perfect contraction of the heart generally, mainly of its ventricles.

2d, Increased distention and tension of the arterial system.

3d, Increased arterial recoil; producing—

4th, Increased or improved coronary circulation; and thus—

5th, Improved nutrition of the heart; which results in—

6th, Compensatory hypertrophy.

7th, In connexion with these results, we have to consider their probable effects on atheroma and fatty degeneration of the heart.

From these facts it follows, that in all cardiac affections the use of digitalis is indicated in all cases where the action of the heart is weakened, but not where it is augmented. Even in hypertrophy, however, its use is not contra-indicated whenever pain, palpitation, or other symptoms reveal the fact of over-taxation; but smaller doses are usually required, and by these small doses the desired result is obtained. It must not be employed on any idea of its tranquillizing action being in its nature allied to that of a narcotic or sedative —the opium of the heart, as it has been termed; it is only by enabling the heart to act without laboured effort that it calms excitement. In all valvular affections, digitalis is useful or useless, entirely as it is possible to produce efficient conservative compensatory changes in the muscular walls.

[These comprehensive general views, which are apparently—we had almost said unquestionably—correct, we prefer laying before our readers, without following Dr Fothergill further into the special applications of digitalis in the several forms of cardiac affection, because these general views contain sufficient to guide any intelligent practitioner, and because we believe that our present knowledge of the action of digitalis does not permit us to lay down any more accurate rules for its employment in any special form of cardiac lesion. Each case must stand on its own merits, but it is important to know that we have in digitalis a drug capable of producing a certain definite action.]

The contra-indication to the employment of digitalis is *par excellence* the presence of atheroma to any extent, and, next, fatty degeneration of the heart. But these objections are in a great measure theoretical. In the usual condition of general atheroma, the danger would be done away with by the serious impairment of the contractility of the arterioles. In fatty degeneration of the heart, the increased muscular action obtained by the action of the drug is sufficient to counterbalance any capillary opposition; danger from this cause seems hypothetical. In the purely speculative condition of partial degeneration of the ventricular walls, danger might accrue, but we must never allow our patient to die of cardiac asthenia from the hypothetical fear of rupturing a rotten section of the heart-wall.

The occurrence of intermittency during the administration of digitalis has hitherto been deemed a valid contra-indication of its use; and it certainly is so, if actually the result of the use of the drug: it is an evidence that its physiological effects have been reached. Thus, if we find the pulse thready, the heart's action a steady thud, and the bulk of the urine diminished, we must withdraw the drug. But intermittence is not always associated with these symptoms, and instead of being an indication for the withdrawal of the drug, is rather an indication for its more free administration. The diagnosis between these two forms of intermittency must rest in a great measure on the circumstances under which the digitalis has been administered. Thus, if given in hypertrophy and in a healthy person, the *a priori* probability would be that the intermittence was due to the over-action of the drug; while, if the digitalis were given in great cardiac debility and growing obstruction, or obvious failure of the heart's action, the occurrence of intermittence would be an evidence of the imperative necessity for an increase of the dose. Persistent vomiting, loss of appetite, noises in the head with flashes of light, or other symptoms of the system being fully under the influence of the drug, or of some idiosyncrasy on the part of the patient, would suggest its withdrawal, and either the use of some similar agent, or its administration in some other form or combination. Thus, many who cannot tolerate digitalis on an empty stomach, can take it without inconvenience if given an hour after food. Attacks of syncope or other cardiac failure, far from being any valid objection to its use, are, in fact, like intermittence, frequently an indication for more of it. Stimulants may require to be given along with digitalis, but failure of the heart's action is the result of the affection, and not of the drug. In digitalis poisoning from one large dose, we must of course at once empty the stomach; its effects on the heart either in this acute form of poisoning, or in a more chronic one, are to be counteracted by aconite, and possibly by the Calabar bean. From its action in improving cardiac contraction and in constricting the small arterioles, digitalis is an admirable remedy in various cerebral affections depending on anæmia of the brain, notably in delirium tremens, as was pointed out by Mr Jones of Jersey. For similar reasons, it also acts as a diuretic, not because it is specially eliminated by the kidneys, thus producing increased secretion, but solely because it increases the blood-tension in the arterioles of the glomeruli.

Whenever, from digitalis intoxication, the heart is approaching the state of permanent systole, the arterial tension becomes lessened, not from want of *vis a tergo* as in cardiac asthenia, but from defective supply of blood, the result of the unnatural contraction of the ventricles; hence diminished secretion of urine is one of the earliest and most delicate tests of digitalis poisoning.

As a useful means of keeping up the action of digitalis for a long time, Dr Fothergill recommends a pill composed of half a grain of the powdered leaves of digitalis, as much of the dried sulphate of iron and of cayenne, to be given in extract of gentian, or in the aloes and myrrh pill, one pill to be taken twice a day.—*British Medical Journal.*

HOW TO KEEP A HORSE QUIET who kicks during the night. This most annoying habit, which often produces unsightly swellings on the hocks, besides more serious injuries, is frequently the result of nervousness and ennui, and not of mischievous propensities. It is a form of hysteria of the limbs, to which others besides horses are subject; unfortunately, the same simple means of cure so efficacious in the horse is not so applicable to the human animal. To cure this disagreeable habit in the horse, all that is required is to attach a round ball of wood, weighing about two pounds, to the hind fetlock of the limb most commonly employed in this pastime by means of a leather strap two feet and a half or three feet long. Whenever he lifts his foot to kick, a blow from the ball at once administers a correction for the fault he is about to commit, and in a short time he gives up his bad habit. This plan has proved very successful. —*Art Medical*, and *Revue de Thérapeutique Médico-Chirurgicale*, 12th August.

DANGERS OF CHROMIC ACID.—M. Gubler remarks that chromic acid is one of the most powerful of caustics. Only the monohydrous sulphuric acid at all approaches it in strength. It acts rapidly, setting free a considerable amount of heat, so that the temperature may rise to 125 or 150 degrees. If we plunge a small animal, such as a mouse, into a concentrated solution of chromic acid, it is instantaneously reduced to a cinder; and the ebullition is so great that, unless care be taken, the mouse and a part of the solution are forcibly ejected. This caustic, applied over an extensive surface, may therefore give rise to a deep slough. Further, the absorption of chromic acid is not free from danger, and patients have been poisoned by a too extensive application of this caustic to the surface of their bodies.—*Gaz. Méd. de Paris*, and *Bulletin de Thérapeutique Médicale et Chirurgicale*, 15th August 1871.

Part Fifth.

MEDICAL NEWS.

UNIVERSITY OF EDINBURGH—GRADUATION CEREMONIAL.—On Tuesday, 1st August, at 10 A.M., the formal "capping" of the graduates in the Faculty of Medicine took place in the Music Hall. The hall was completely filled upon the occasion by a brilliant assemblage of ladies and gentlemen. The Lord Justice-General, Chancellor of the University, occupied the chair; and was supported by Principal Sir Alexander Grant, the members of the Senatus Academicus, Dr Donaldson, Rector of the High School, and Bailie Miller.

Professor CHARTERIS opened the proceedings with prayer.

Previous to the ceremony of graduation in Medicine, Professor MACPHERSON, as Dean of the Faculty of Law, presented the following gentlemen for the honorary degree of Doctor of Laws, introducing each of them with a brief statement of the reasons for which the degree was conferred:—Thomas Andrews, F.R.S., Vice-President of Queen's College, Belfast, and Professor of Chemistry in the Queen's University; W. B. Carpenter, F.R.S., M.D. Edin., Registrar of the University of London; Professor Challis, Cambridge; Auguste Golding, Denmark; John Peter Gassiot, F.R.S.; William Huggins, F.R.S., D.C.L. Oxon., etc.; M. Jules Janssen, Member of the Academy of Sciences, Paris; James Prescott Joule; G. E. Paget, M.D. Cantab., D.C L. Oxon., President of the Medical Council; W. Spottiswoode, F.R.S.; George Gabriel Stokes, F. and Sec. R.S., Lucasian Professor of Mathematics, Cambridge; James Joseph Sylvester, late Professor of Mathematics, Woolwich; Allen Thomson, M.D., Professor of Anatomy, Glasgow; and Pierre Joseph Van Beneden, Professor of Comparative Anatomy in the University of Louvain. These degrees were conferred in the usual manner, amid the applause of the audience.

Professor BENNETT then presented the following gentlemen, who had been judged worthy to receive degrees in the Faculty of Medicine:—

DEGREE OF DOCTOR OF MEDICINE.—(Three stars indicate those who have obtained gold medals for their dissertations; two stars, those deemed worthy of competing for the dissertation prizes; and one star, those commended for their dissertations.)—*Candidates who received their degree under the new statutes:*—Joseph Brown, Scotland; **John Brown Buist, Scotland; *James Wilkie Burman, England; James Christie, Scotland; ***James Cumming, Scotland; Henry Dalton, Demerara; *John Janet Kirk Duncanson, Scotland; *Robert William Foss, England; Charles Edward Glascott, England; Geoffrey Hett, England; *Francis Raworth Heycock, England; Alfred Roberts Law, England; Robert Philip M'Laren, New Brunswick; Robert Munro, M.A., Scotland; Nathaniel Daniel Isaac Oman, Scotland; *** Urban Pritchard, England;

*David William Roberts, Wales; Claudio Lisboa Serra, Rio de Janeiro; William Henry Symes, England; Archibald Dunbar Walker, India, Strethill Henry Wright, Scotland. *Candidates who received the degree under the old statutes:*—*John Mitchel Hunter, England; Francis George Joynt, Ireland.

DEGREES OF BACHELOR OF MEDICINE AND MASTER IN SURGERY.—Robert Archibald Adam, Canada; Reginald Gervase Alexander, England; Robert Harbin Alleyne, Barbadoes; Thomas Anderson, Ireland; John Armstrong (M.A. Edin.), Scotland; Harry Benjafield, England; Arthur James M'Donald, Bentley, England; Samuel Edmund Bligh, England; Frederic Adolphus Bond, India; George Bowman, England; John Storrs, Brookfield, Ireland; Joseph John Brown, England (with second-class honours); John William Buckell, England; Millen Coughtrey, England (with second-class honours); John Sim Cowan, Scotland; Hanmer Dickson, Tripoli; John Edward Dickson, Jersey; Justyn George Durham Douglas, Canada; Henry William Drew, Cape of Good Hope; Alexander Dunbar, England; David Richard Edwards, Wales; Richard Edward England, England; Charles Gowan, Scotland; Peter Gowan (B. Sc. Edin.), Scotland; James Grant, Scotland; Campbell Cave Greenidge, Barbadoes; William Hardman, England; George Home, Scotland; James Muir Howie, Scotland; Robinson James Hutchinson, England; James Jardine, Scotland; John Johnstone Salcomt Johnstone (B.A. Oxon.), England; Alexander Ewing Keith, Scotland; William Lemon Lane, India; Robert Lawson, Scotland; John Leitch, Scotland; Joseph Henry Little, Ireland; William Livesay, England; John Lowe, Scotland; Norman M'Caskie, Scotland; Donald Stewart Macdonald, Scotland; Johnstone Macfie, Scotland; Donald Macrae, Scotland; Herbert Coddington Major, Jersey; Thomas William Mawson, England; Henry Meadows, England; Augustus Nicoll, Jamaica; Joseph Chaning Pearce, England; Henry Alleine Perkins, Tasmania; William Sang, Scotland; John Catchick Shircore, India; George John Malcolm Smith, Canada; John Stiell, Scotland; David Thorburn Taylor, Scotland; John Thomson, Scotland; William Thomson, Scotland; Robert Thorburn, England; John Knowsley Thornton, England; John Moore Walker, England; John Thomas Wightman, Scotland; Edward Moon Wilson, Brazil.

DEGREE OF BACHELOR OF MEDICINE.—John Clelland Clarke, Ireland (with second-class honours); Robert Taylor Sumner Eagar, England; George Harrison Evans, England; Matthew William Gairdner, Scotland; Henry Harvey, England; James Roland James, Wales; John William Macdonald, Nova Scotia; Edmond West Symes, England; Edward Willis Way, England.

The Ettles Prize of £40 to the most distinguished student of the year, has been awarded to Urban Pritchard, M.D.

After this, Professor Fraser presented for the degree of M.A. Mr J. W. Pringle, who had not been able to appear and receive the honour on a previous occasion.

Professor Bennett then delivered the Graduation Address, in which he first alluded cursorily to the unrivalled variety and extent of a medical education, and to the manifold and important objects it necessarily embraced in preparation for the great work of the physician, the preservation of the health and the treatment of the diseases of so complex an organism as man. He then pointed out that, notwithstanding the high value placed upon life and health, the laws regulating them are almost completely ignored by the community, and important measures necessary for the extinction of disease are inveighed against from mistaken views as to their theological bearing, stating that this tendency to place scientific doctrines in opposition to religious beliefs did not arise because scientific men were irreligious, but because religious men were unscientific. Of this fact Dr Bennett then proceeded to give what he considered to be various apt illustrations, culled from the fables of the ancients, Froude's address at St Andrews, and Addison's hymns, concluding with an earnest appeal for the introduction of physiology as an important branch of general education.

The benediction was then pronounced by Professor CHARTERIS; and the newly-capped graduates having received the congratulations of the Senatus, the proceedings were brought to a close.

A BUST OF PROFESSOR CHRISTISON was placed in the Hall of the College Library on the 29th of June last, and a *replica* of the bust was presented to his family. This distinguished honour, so rarely conferred, especially during the lifetime of the party concerned, has been well earned by a steady and consistent devotion to the interests of the students and of the University, as well as to the advancement of science during the forty-nine years that Dr Christison has been a member of the Senatus, first as Professor of Medical Jurisprudence, and latterly of Materia Medica. The bust is an excellent likeness, by Mr William Brodie, R.S.A.

THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE held its forty-first meeting at Edinburgh during the week extending from 2d August to 9th August inclusive. This meeting has been very successful, and included a total number of members and associates of 2463; of these 754 were ladies, and 21 foreign members. The money received for their tickets was £2575. Among the foreign members present were the Abbé Moigno; the Abbé Richard; Professor Szabo, Pesth; Dr Luroth, Carlsruhe; Professor Margo; Senor Arturo de Marcoartu, deputy to the Spanish Cortes; Dr Lutken, Copenhagen; Dr J. A. Boogard, Leyden; Dr G. H. von Baumhaven; Dr C. H. Buys Ballot, Utrecht; Professor Gilbert Wilson, Chicago; Professor Gotvos, Pesth; Professor Bierens de Haare, Leyden, etc. The proceedings were altogether of an interesting character, and seemed, moreover, in the anthropological section, to be somewhat exciting, judging from the behaviour of some of the members during the discussion of a few of the more sensational papers. The opening address of the president, Sir William Thomson, was somewhat too diffuse to deserve the characteristic of powerful, but it was interesting and well received, and concluded with perhaps the most sensational statement made during the whole meeting, viz., the possible origin of life on our planet from germs transported to it by a so-called aerolite—the fragment of an earlier world. A theory which may possibly be, as he says it is, perfectly scientific, but which, nevertheless, gives us no clue to the actual mode of origin of life, really drawing a thicker veil over that origin. Various interesting communications were made to the different sections, but, upon the whole, there was a tendency to popularize, a deficiency in originality, and an absence of criticism, for which there was indeed not sufficient time, which detracted from the high scientific character of the proceedings, and tended to produce an impression unfavourable to the importance of such meetings in a strictly scientific point of view.

THE BRITISH MEDICAL ASSOCIATION held its thirty-ninth annual meeting at Plymouth on the 8th, 9th, 10th, and 11th of August, under the presidentship of John Whipple, F.R.C.S., Plymouth, whose address of welcome was mainly an epitome of the history of the town in which the Association were met. Dr George Johnson read the address in Medicine, and Professor Lister that in Surgery. The proceedings closed with a dinner. At this meeting it was resolved to remove the headquarters of the Association to London.

THE ADVANCE OF CHOLERA.—In the central and western provinces of Russia cholera has never entirely disappeared since its importation in 1865; in 1869 it again became epidemic, as occasionally happens after severe epidemics in those countries where local conditions exist favourable to its re-development. During 1870 it continued to exist, and towards the end of the year to spread to various parts, especially the seaports of the Black Sea, whither it seemed to be brought by those engaged in the transport of grain. In November 1870 it appeared at St Petersburg, where it continued to maintain its hold with gradually lessening force till July of the present year, when a less serious outbreak again commenced. Since that time it has progressed towards the west of Prussia, and has invaded Königsberg, where, on the 14th of August, the number of persons attacked was 62, and the deaths 22. Cholera has also broken out in Persia. It is satisfactory, however, to note that this epidemic is distinguished by the slowness of its progress, and by its mild character, the mortality being small in proportion to the number attacked. It is, nevertheless, within a week's sail of this country, and but for the active and efficient means employed by Government to arrest its importation, there can be little doubt but that we would probably have had a more or less serious outbreak of it; as it is, we think that an efficient quarantine will suffice perfectly to arrest any attempts to reach our shores, though that is no reason why we should relax in our endeavours to set our house in order in a more perfect manner than the French préfêt, who, when desired to prepare for cholera, telegraphed back that he had set all the able-bodied men to dig graves. In regard to the matter of prevention, the Board of Supervision has issued the following regulations to all the Local Authorities in Scotland having jurisdiction in terms of "The Public Health (Scotland) Act, 1867:"—

"I. The Local Authority shall forthwith take measures for the discovery and removal of all nuisances within the limits of their jurisdiction, in the manner provided by the said Public Health Act, and shall carry out such measures effectually and as speedily as may be.

"II. The Local Authority shall take measures to disinfect and deodorize all places from which any nuisance has been removed, and to enforce or effect the cleansing and limewashing of the interior of all rooms, stairs, passages, or houses which may be deemed to require it.

"III. The Local Authority shall exercise the powers conferred upon them by the 36th section of the said Act, to enter and inspect, by themselves, or by officers or persons by them authorized in this behalf, any premises where they have ground for believing that necessity may exist for executing in relation to the premises any of these directions and regulations.

"IV. The Local Authority shall exercise the powers with which they are invested by the 37th section of the said Act: and on obtaining, through the sanitary inspector, or the medical officer, or otherwise, sufficient evidence that any house or part of a house is so overcrowded as to be dangerous to health, shall regulate the same according to the provisions of the said Act in reference to common lodging-houses.

"V. In any case in which there is any doubt as to the wholesomeness of water used by the inhabitants as a beverage, or for dietetic purposes, the Local Authority shall take immediate steps to ascertain the quality of such water; and if it shall be certified, after analysis by a competent analytical chemist and by a qualified medical practitioner, or certified by two such practitioners, that the water of any well or other source used as a beverage or for dietetic purposes within the jurisdiction of the Local Authority, is so tainted with impurities, or otherwise unwholesome, as to be injurious to the health of the persons so using it, or calculated to provoke or aggravate choleraic or other epidemic, endemic, or contagious disease, the Local Authority are hereby required to take prompt measures for procuring wholesome water to be supplied in its stead, so far as the case requires, to the inmates of the houses situated within the limits of their jurisdiction, and to prohibit and prevent the use, as a beverage or for dietetic purposes, of the unwholesome water, and, if necessary, to shut up any well or wells from which it is drawn.

"VI. In order to enable Local Authorities, within whose jurisdiction any harbour, port, or anchorage ground is wholly or partly situated, to carry out promptly and suitably the 6th section of the Order of Council, dated the 3d August 1871, with relation to ships and vessels, measures shall at once be taken by such Local Authorities, if hospital accommodation is not already available to them, to secure and prepare a suitable room or house to which per-
suffering from cholera, if such cases should occur, can immedi-
e removed for care and treatment, and in which they will
uitable accommodation, and sick-bed as well as medical
nce provided by the Local Authority."

List of the Candidates of H.M.'s British Medical Service who were successful at the Competitive Examinations held at London in February, and at Netley in August 1871, after having passed through a course at the Army Medical School, Netley.

	Name.	*Studied at*	*No. of Marks.*
1.	Crombie, A.,	Edinburgh,	5965
2.	Stuart, G. B.,	Melbourne and Edinburgh,	5775
3.	Irving, L. A.,	Dublin,	5335
4.	M'Cracken, J. A.,	Belfast,	5320
5.	Beamish, J. M.,	Cork,	5150
6.	Clery, J. A.,	Dublin,	5060
7.	Cruikshank, B.,	Aberdeen,	5040
8.	Coats, J.,	Glasgow,	5005
9.	Williamson, J. G.,	London,	4640
10.	Bradford, H.,	London,	4630
11.	Fawcett, W. J.,	Dublin,	4482
12.	Joynt, H. W.,	Dublin,	4475
13.	Saunders, W. E.,	London,	4470
14.	Leckie, D.,	Glasgow,	4342
15.	Charlton, W. J.,	Dublin,	4310
16.	Ruxton, J.,	Aberdeen,	4300
17.	Anthonisz, A. H.,	Aberdeen,	4185
18.	Tobin, W.,	Dublin,	4170
19.	Molloy, O.,	Belfast,	4145
20.	Moylan, W. J.,	Dublin,	4120
21.	Exham, R.,	Cork,	4056
22.	White, W. L.,	Edinburgh and Aberdeen,	4016
23.	M'Namara, J.,	Cork,	4013
24.	Harman, R.,	Dublin,	3980
25.	Wilson, J. B.,	Sheffield, Edinburgh, and Galway,	3860
26.	Leake, G. D. N.,	London,	3812
27.	Martin, J. W.,	Dublin,	3812
28.	Robinson, R. H.,	Dublin,	3683
29.	Gabbett, P. R. D.,	Montreal and London,	3677
30.	O'Connell, M. D.,	Cork,	3636
31.	Palmer, C. de M.,	Dublin,	3566
32.	Ward, E. C. R.,	Dublin,	3558
33.	Finlay, W.,	Dublin,	3537
34.	Sullivan, W. P.,	Dublin,	3513
35.	Joynt, E. H.,	Galway,	3486
36.	Dickson, J. R.,	Kingston, Montreal, and London,	3450

SMALLPOX has been epidemic to a slight extent in Edinburgh of late, four deaths being recorded as having occurred in July. Most of the cases have been imported, but a few have originated from these imported cases. The continual smouldering in the smallpox wards of the antiseptic fuel of Dr Dewar of Kirkcaldy has been eminently successful in keeping them perfectly sweet and free from smell.

DIPHTHERIA of a very malignant type has been prevalent in Edinburgh of late—three deaths having occurred in April, eleven in May, thirty-two in June, and twenty in July. And the most remarkable point in regard to this epidemic has been its prevalence and fatality in some of the best districts of the city, and its almost entire absence from those low and overcrowded localities where zymotic diseases are most apt to rage, clearly pointing to a localizing influence which is certainly not ochlotic in character.

MEDICAL APPOINTMENTS.—Mr Jardine Murray was elected President, and Mr George Latham, J.P., was elected a Vice-President of the Medico-Chirurgical Society of Brighton and Sussex at the annual general meeting on Tuesday, 2d July 1871.

GOODSIR MEMORIAL FUND.

SUBSCRIPTIONS RECEIVED SINCE LAST REPORT.

Dr Beddoe, Bristol,				£1	1	0
Dr Marshall, Clifton,				1	1	0
Dr Henderson, Gainsborough,				1	1	0
Per Dr Duckworth, London:—						
Dr Andrew Clark, London,	£5	0	0			
Dr Day, F.R.S., Torquay,	1	0	0			
Dr Otte, Torquay,	1	1	0			
Dr Clifford Davies, Bury,	1	1	0			
Dr J. G. Smith, London,	1	1	0			
Dr Tom Hewitt, Windsor,	2	2	0			
				11	6	0
Dr Yellowlees, Bridgend,				2	2	0
				£16	11	0

PUBLICATIONS RECEIVED.

Biennial Retrospect of Medicine and Surgery. London, 1871.

J. Crichton Browne, M.D.,—West Riding Lunatic Asylum Medical Reports, vol. i. London, 1871.

J. Drysdale, M.D.,—Life and the Equivalence of Force. London, 1871.

Robert G. Glenn, LL.B.,—Manual of the Laws affecting Medical Men. London, 1871.

Alexander Harvey, M.D.,—Articles of the British Pharmacopœia, pointed according to their relative Values. Aberdeen, 1871.

Dr W. Kramer,—Die "Exakten" Deutschen. Berlin, 1871.

C. Ludwig,—Arbeiten aus der Physiologischen anstalt zu Leipzig. Leipzig, 1871.

E. D. Mapother, M.D.,—Animal Physiology. London, 1871.

William Squire, L.R.C.P.,—Puerperal Temperature. London, 1871.

PERIODICALS RECEIVED.

American Journal of Insanity,—July.
American Journal of Med. Sciences,—July.
American Journal of Syphilography and Dermatology,—July.
American Practitioner,—July, August.
Annales d'Oculistique,—May, June.
Australian Medical Gazette,—April, May.
Berliner Klin. Wochenschrift,—June 26 to August 21.
Births, Deaths, and Marriages, Monthly Return of,—June, July.
Births, Deaths, and Marriages, Quarterly Return,—June.
British and Foreign Medico-Chirurgical Review,—July.
British Medical Journal,—July 1 to Aug. 19.
Bulletin Général de Thérapeutique,—Sept. 30, 1870, to May 15, 1871; June 15 to Aug. 15.
Bulletin of the New York Academy of Medicine,—Nos. 10 to 17.
Food Journal,—July.
Gazette Hebdomadaire de Médecine, etc.,—June 23 to August 18.
Gazette des Hôpitaux,—Feb. 14 to June 13.
Journal of Mental Science,—July.
Journal de Médecine et de Chirurgie Pratiques,—March to June.
Klinische Monatsblätter für Augenheilkunde, April, May.
Madras Monthly Journal of Medical Science,—June, July.
Medical Press,—June 28.
Medical Times and Gazette,—July 1 to August 19.
Medical World,—July, August.
Medizinische Jahrbücher,—Jahrgang 1871, Heft 1, 2.
New York Medical Journal,—May, June.
Philadelphia Medical and Surgical Reporter,—May 20 to July 29.
Philadelphia Medical Times,—June 15 to August 1.
Practitioner,—July, August.
Revue de Thérapeutique Medico-Chirurgicale,—June 1 to August 15.
Virchow's Archiv,—June 23.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Sympathetic insanity illustrated—The Influence of the Body on the Mind, and the Mind on the Body.* By ARTHUR MITCHELL, M.A., M.D., F.R.S.E., etc., Commissioner in Lunacy for Scotland.

ECCENTRIC irritations, according to Reynolds, are nearly the most prolific cause of what he describes as genuine epilepsy. These eccentric irritations may be due to dentition, worms in the intestines, excess of venery, the establishment of the menstrual discharge, and a host of similar causes. Brown-Séquard also is of opinion that this is an exceedingly common cause of epilepsy. He says that in a large number of cases "there is an irritation from some point of a centripetal nerve, especially from its peripheric parts in the skin or in the various mucous membranes," and he believes that we can often avert the fit by preventing this irritation from going up to the encephalon. The importance of this view as to the origin of many cases of epilepsy may have been over-stated by some writers, but no one denies that it is important, and, in point of fact, it is to a large extent a guide of treatment in this disease.

I allude to this subject here only for the purpose of pointing to the fact, that fearful convulsions of the whole body may arise from what appear trifling irritations, at points far distant from the nervous centres. If I give an illustration, perhaps I shall more surely attain my object.

"Vic-D'Azyr relates the case of a woman, who had been subject to epileptic fits for twelve years, which at length became as frequent as four or five times a day. They always commenced with a peculiar sensation in one leg, near the lower part of the gastrocnemius muscle." A surgeon cut down on this spot, and found a hard cartilaginous body about the size of a pea, which he removed, dividing the nerve on which it pressed. After this the woman had no return of the epilepsy.

I take this case from Mason Good, who found it in the Dictionnaire des Sciences Médicales; but there is a still more apt and stri ing one related by De Morgan, on the authority of Mr Standert of Taunton, in whose practice it presented itself.

A boy of fourteen, on getting out of bed in the morning, became violently agitated, spoke incoherently, and broke the furniture. He was put into bed again, when he at once became composed and rational. He remained in this state till Mr Standert visited him, about five hours after the attack. He was then calm and cheerful, and there was no sign of any bodily disorder. He said he felt quite well, and wished to get up, and he was permitted to do so; but on putting his feet on the floor, and standing up, his countenance became instantly changed, the face became convulsed, and he was about to become unmanageable and destructive. Replaced in bed again, he was at once calm, though he looked surprised, and asked what was the matter. Nothing had ever occurred in his history to indicate a tendency to such attacks.

He had been fishing the day before, and had been wading barefoot, and his legs and feet were therefore examined, but no scratch or injury was found. On lifting the foot, however (to examine the sole), by the right great toe, which was thus caught and pressed between the forefinger and thumb, the muscles of the jaws were again suddenly convulsed. On releasing the toe these effects immediately ceased. The toe was then closely examined, and on the bulb, nearly where the circumgyrations centre, there was found a very small elevation, as if a bit of gravel had got below the cuticle. There was no redness, however, nor sign of inflammation; but on pressing this point between the finger and thumb and against the nail of the toe, a slight convulsion instantly ensued. The boy said that he had no pain, but that it made him feel *very odd*. No scratch or puncture of the cuticle at the seat of the little elevation could be detected, but it was snipped off in the expectation of finding the point of a thorn, or a grain of sand. Nothing of the kind, however, was found. But the toe could now be pressed without injury. The strange sensation was gone, and it never returned.

These are two very striking cases. They are, in fact, selected for that reason. I use them here merely to illustrate the eccentric origin of some cases of epilepsy, desiring the illustration to be as clear as possible. It will be understood, of course, that in a host of cases, where the origin may be as truly eccentric, the connexion will be much less manifest. This indeed will be the rule. In the course of this paper I may have to repeat remarks to this effect, so that misapprehension may be avoided. I shall also have to point out occasionally, as we go along, that such eccentric irritations do not in every person produce these serious effects; that, on the contrary, they do so only very exceptionally, and perhaps never, except when there is in the individual some state of preparation. The frequent operation and great value of this state of preparation—— in other words, of the predisposing causes of nervous and mental disturbance—should be kept always in view. They are very varied and complex; and in many cases the large and grave result appears to be due to a fortuitous concourse of adverse conditions. . On these, however, some exciting cause acts in the end to light the fire, and it is clear that peculiar care should be exercised in preventing this spark from falling on material which is inflammable.

In the first of the two cases, no reference was made to mental symptoms, while in the second these were strongly marked. But in every epileptic there is, during the fit at least, a period of mental derangement—of unconsciousness, more or less complete, if nothing else; and in many cases there is much more,—this greater mental disturbance presenting itself both in epileptiform seizures, like those of the boy, and in fully-developed epilepsy. I desire the double influence of the eccentric irritation in the boy's case to be noted—that is, on the mind as well as on the muscles—because we shall have to refer to it again. My immediate object, however, is simply to show the production of muscular convulsions by these seemingly insufficient and unrelated causes.

If we turn now from epilepsy to tetanus, we find, in that variety of it which is called traumatic and which is by far the most common in this country, that nearly every case is strikingly referable to an eccentric origin; while the symptoms of tetanic spasm are even "more appalling and more immediately perilous" than those of epileptic convulsions. Dr Radcliffe says that tetanus may supervene on every description and in every stage of wounds. The most trifling injury may cause it, nor is an inflammatory condition of the wound essential. Indeed it may be almost healed and forgotten. Perhaps, punctured wounds are more likely to issue in tetanus than incised, and those in the extremities than those about the head, face, or trunk; but this is the most that can be said. Yet from such eccentric sources of irritation, there may result a state of such violent spasm and rigidity of the muscles that the body is supported on the heels and the occiput; and, in the great majority of cases, these spasms will go on without control to death.

In this great disturbance of nervous action, the mind may, and perhaps generally does, remain clear from the beginning to the end. In epilepsy, the cerebrum is the seat of the disorder. In tetanus it is the spinal cord.

Who can tell why a wound, which causes such terrible results in one man, should scarcely give inconvenience to another; or why at one time a man is thus affected by a wound, which at other times would have given him nothing more than temporary and slight discomfort? So far as I know, the only explanation we can give is found in that state of preparation or predisposition to which allusion has been made.

If we turn from tetanus to chorea—that singular disease which has been called an insanity of the muscles—we shall find that of it also there is a form which has been designated eccentric. Marshall Hall regards much of chorea as having this origin, and Gregory has detailed the history of several cases which are very illustrative. In one of these, the old teeth were remaining, while the new ones were appearing by their sides. The old teeth were drawn, and the removal of the chorea was complete.[1]

Dr Radcliffe says that, "it would seem as if the parts of the nervous centres which are concerned in the production of choreic movements may be affected from a distance by reflex action." "Nor is this to be wondered at," he adds, "seeing that there are facts without number which show that distant parts of the nervous system are continually being affected by reflex action."

It appears, therefore, that we have *not one* form, but *various* forms of disordered action in the muscles due to eccentric irritations. We have, in other words, sympathetic, reflex, or eccentric epilepsy, tetanus, and chorea.

But there is not only a reflex excess and waywardness of action in the muscles. There is also a reflex loss of power, a reflex paralysis, a reflex paraplegia. There may be some disputing about the exact nature of this state, but there is little or none about its existence, and it is generally admitted that paraplegia may be the result of disorder or disease beginning at a distance and affecting the cord secondarily and sympathetically. "Perhaps," says Reynolds, "the causes at work in producing all spinal maladies are reflex in their character as well as centric; reflex, it may be, rather than centric."

Among other diseases, those of the genito-urinary organs are believed to be the cause of this paraplegia. Brown-Séquard thinks that they are often the cause, and he relates a good case in illustration, which occurred in the practice of Rayer. Loss of power in the lower limbs came on in a patient soon after he was attacked by nephritis. The nephritis was improved, and the paralysis was at the same time improved. A short time after, the patient was again attacked with acute symptoms of nephritis, and lost the power of standing. The nephritis was again cured, and along with it the paraplegia.

Brown-Séquard thinks that there are two modes of reflex action by which these eccentric irritations may produce paraplegia—(1) by contraction of the bloodvessels in the cord, in the motor nerves, or in the muscles themselves; and (2) by a reflex influence on nutrition. He says he has *seen* a contraction of the bloodvessels in the pia mater of the cord, when a tightened ligature was applied to the hilus of the kidney or to the bloodvessels and nerves of the suprarenal capsules.

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[1] Watson's Lectures, i. 663.

In this form of paraplegia, perhaps, the eccentric irritations act generally (through the nerves going to the bloodvessels) in altering the nutrition of the nervous centres, and thus disturb their function. But we do not know much for certain in the matter, and it is difficult to make any theory apply everywhere. In this, however, as in many other things, we accept the facts, though we are unable fully to explain them. For instance, we know perfectly well, though we may not be able to explain the phenomenon to its bottom, that a pinch of snuff on the peripheries of the olfactory nerve, or even the going suddenly into bright sunlight, may lead to a reflex convulsive action of the muscles which operate in respiration; and we know quite as surely that similar eccentric irritations may produce the general convulsion of epilepsy or spasm of tetanus. There is, in fact, no essential or scientific difference between these last phenomena and the familiar phenomena of a sneeze. The difference lies only in the greater gravity of the former.

All this may appear to be somewhat irrelevant in a paper on insanity, but I do not think that it will continue to present itself in this light, when I point out that we have disturbances of the mind resulting from eccentric irritations in the body, just as we have disturbances in the muscles. We have also different kinds of mental, as we have different kinds of muscular disturbance with this origin. We have in mania and fatuity something like the analogues of convulsions and paralysis, and we have them arising from similar causes. This, in fact, is what is meant when we speak of sympathetic or reflex insanity, the story of whose production is so like that of the neuroses to which I have just referred, that we cannot escape from seeing the close alliance which exists between them, and the great desirability of studying them together.

To the medical man, every psychopathy has a corporeal substratum. Without this, it could only be regarded as vice or sin, for the treatment of which a knowledge of anatomy, physiology, and materia medica would scarcely be considered the suitable qualifications.

Our usefulness lies entirely in dealing with the relations of body to mind. Feuchtersleben says that the purely spiritual differences of men belong to the province of ethics; their purely corporeal to physiology; they engage the attention of medical men only on that line where they meet. To the physician, therefore, "every psychosis is, at the same time, a neurosis," though "every neurosis may not be a psychosis." That is, there may be disease of the nervous centres both with and without mental disorder, but no mental without some cerebral disorder. And thus the medical treatment of insanity rests on Shakespeare's idea that—

> "We are not ourselves
> When Nature, being oppressed, commands the mind
> To suffer with the body."

I proceed to illustrate these views by an account of what has been called sympathetic or reflex insanity, and I shall begin by noticing a phenomenon which is very familiar to all of us.

Man is said to be the only animal that laughs. He is about six weeks old before he begins. What infants laugh at who are somewhat above that age, we can scarcely tell; but all agree that laughter expresses in them some pleasurable state of the mind. In later life, most of our laughter occurs when the mind catches sight of some unfamiliar deformity, incongruity, or discord, either in objects, manners, creeds, morals, conventionalities, thoughts, or words. It is scarcely perhaps complimentary to human nature to deliver this opinion, and then to add that in adult as in early life laughter indicates a pleasurable state of mind. It will be observed that I do not call it joy or gladness, but simply a pleasurable as opposed to a painful state of mind—this being all that is necessary for my present purpose. Laughter, therefore, usually follows a certain state of mental action—that is, certain mental operations cause the bodily phenomena which we call laughter.

But we can reverse the process, and, by acting on the body, we can call up both the pleasurable state of mind and the phenomena of laughter. What else happens when the sole of the foot is tickled? Here we have a trifling irritation, as far as it can well be from the great nervous centres, producing a particular state of mind, and also producing those bodily phenomena which often follow that state of mind, when it is otherwise induced.

We get the same results by tickling other parts of the body—the armpits, the lips, and the nostrils—but we need only refer here to the sole of the foot.

We have all witnessed these phenomena so often that they fail to arrest attention, but I shall be disappointed if, after what has been said, they are not at once felt to be interesting and suggestive. A definite mental state, and definite muscular action, are produced when we gently rub the sole of the foot,—as if "head with foot had private amity."[1] When we tickle the sole of the foot we know almost for a certainty that laughter, and not sobbing or sighing, will be the result. We shall have the quick convulsive expirations of laughter, and not the quick convulsive inspirations of sobbing. We shall have the pleasant action of mind which laughter discloses, and not the unpleasant state which we reveal by moans and groans, or sobs and sighs.

Then, moreover, this remote, and seemingly insufficient irritation, calls up these psychical and physical phenomena not with our will, but against it. In other words, this sympathetic laughter is in a general sense involuntary. Would it be going too far to apply an uncomfortable word to the state of a man who roars with laughter which he cannot control, and which has no adequate or perceptible cause? Even when we see the tickling, does it not seem ridiculously insufficient and unrelated? But it may be going on out of our sight—it may even be something like the little elevated spot on the boy's great toe, which did not give rise in him to phenomena of a really more startling character than those of which I now speak. If this involuntary laughter should *continue*, how far would the subject of it stand from a state of sanity, and how near to a state of insanity? How should we practically regard the matter then, and where should we put the unfortunate sufferer to get rid of him?

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[1] George Herbert.

I do not wish to push this familiar illustration of my subject too far, nor am I at all to be understood as describing or explaining the phenomena of laughter from titillation. To many of these, it is unnecessary, for my purpose, even to make allusion—such, for instance, as that a man can scarcely provoke laughter by tickling the sole of his own foot; that though the sensation cannot be called painful but rather pleasurable, "there is ever," as Bacon says, "a starting or shrinking away of the part (tickled) to avoid it;" that the skin must be *softly and lightly* and *not roughly or heavily* touched, in order to excite laughter; that though the phenomena are to a great extent involuntary, they are by no means entirely beyond control.

There are two points, however, to which I would refer. One of them is this:—Is it not the case that some are provoked to laughter much more easily than others by such things as tickling the sole of the foot or the armpit? If so, how do these differences occur, and what meaning have they? If I explained them by saying that in those who are easily provoked to laughter, in this or any other way, there is probably a mobile or unstable state of the nervous system, I should be doing what I desire to avoid, and what in writing on such subjects can only be avoided by an effort—that is, I should be appearing to give an explanation, when in reality I was giving none. If I accounted for these differences by degrees of mobility and stability in the nervous system, I should have still to explain what this means—a task, I fear, which I should fail to accomplish satisfactorily. Yet I think all will agree that when we speak of a mobile and unstable state of the nervous system, the words call up to the mind a state with which we feel familiar, and which we think we can recognise. When our knowledge is deeper, perhaps we may use other and more definite words in speaking of it; but in the meantime, with these qualifying remarks, it is sufficient for my purpose, and may be of practical importance, if I succeed in indicating one of the *recognisable* states of preparation for being *easily* or *not easily* acted on by such eccentric irritations as that under notice.

The other point to which I desire to refer is this:—What would happen if the tickling were persisted in—in other words, if this irritation of the peripheral nerves were kept up? I have no facts enabling me to give a definite answer to this; yet I think I am justified in asserting that the effects might be serious. I am sure that no prudent man would sanction the prolonged or persistent tickling of a young child. In adults the laughter cannot so readily be kept up as in children; but in them it can be sufficiently prolonged to cause the pleasurable feelings to give place to feelings of discomfort, distress, or even pain, which feelings are not then referred to the foot but to the head, and they may end in tears and sobs—a totally new and opposed set of phenomena. We may safely assume that changes of nutrition will occur in those parts of the nervous centres which are excited into such lively action, if it be prolonged; and that the functions of such parts will thereby be modified, while other parts may at the same time be called into abnormal action. In ordinary circumstances the laughter will cease or become feeble as soon as it begins thus to act injuriously. And whenever it ceases there will of course be the commencement of a return everywhere to the normal state—a return which will be safely and quickly accomplished, provided that the departure has not been great, and that there were not previously weak points in the nervous centres requiring only some unusual action to induce in them a serious derangement.[1]

If what has already been said does not lead to some understanding of how a trifling eccentric irritation may cause grave lesions of mind and body, it is because I have been unable to state my case clearly and its illustrations aptly, and not because the case itself is not clear, or the illustrations inapt. In the hope, however, that I have not failed in my object, I shall proceed now to show that we meet, in actual practice, many cases of insanity which we believe to be due to these eccentric irritations, and that the lesions they inflict on the mind are not less grave, and not less frequent, than those we found them inflicting on the body when we spoke of epilepsy, tetanus, chorea, and paraplegia.

In doing this, I shall be steadily disclosing the intimate and singular relations of mind to body and body to mind—proving, at every step, that "like the jerkin to the jerkin's lining, so is the body to the mind—rumple the one and you rumple the other."

The most notable, perhaps, of these sympathetic insanities are those in which the eccentric irritation lies in the colon. Esquirol seems to have suspected that this was a prolific cause of insanity, but the subject has been more fully discussed by Schroeder Van der Kolk than by any other writer; and the prominence which he gives it I believe to be no greater than it deserves. It is also well handled by Greisinger, Morel, Maudsley, and Blandford. I shall state, as briefly as I can, what is known regarding it, drawing my description chiefly from the first of the observers I have named.

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[1] Rausius Textor gives a list of persons who died laughing; but it is a common saying that laughter never actually kills. Perhaps, for the reasons I have given, the saying may be in a sense correct. The deaths of Chrysippus and Philemon, however, are said to have been immediately due to fits of laughter, provoked, in both cases, by the sight of an ass eating figs out of a plate, from which we may safely infer that the story of their deaths is a fable.

First, then, what are the mental phenomena which present themselves, and have they any distinctive character? The answer to this is that, in the insanity which comes from this source, there is almost invariably a depressed or melancholic state of mind; but more than this, the depression has certain characters which tend to distinguish it from depressions due to other causes. The mental phenomena of course differ more or less in every case, but they show a sufficient sameness to be fairly regarded as distinctive. It has been said that, if two men were in every respect absolutely the same, an identical cause of mental derangement in them would probably be followed by identical results. But we never have these conditions. Their absence, however, is not more apparent in dealing with mental, than in dealing with bodily diseases. Thus, no two cases of smallpox are absolutely the same, yet both may be unquestionably cases of smallpox. So it is with mental diseases; and when we fail in noticing a general agreement between two such cases of insanity, it may often be due to the fact that we are not in the habit of examining the mental signs of disease, while we are all educated and trained observers of the bodily signs.

In melancholic persons, then, whose mental disorder proceeds from some eccentric irritation in the colon, along with the general feelings of depression, sadness, and gloom, there are engrossing self-accusations of wickedness and baseness either in the present or in some past time. They persistently calumniate themselves. They regard their fits of sadness as qualms of conscience. They have rendered their relations or friends miserable, or have plunged them into poverty. They have been cheaters, peculators, and have used money which did not belong to them. They have shown a wicked want of affection towards parents, wives, or children; they are the cause of other people's sorrows, sufferings, and losses, and are waiting to be punished; they must not eat, because they have wasted their money, and have none left to pay for food; they have deservedly fallen under contempt, and so on. In short, they are depressed and sad, and they say they are so, because conscience is awakened in them to a sense of their great wickedness, and they are accordingly loud and unceasing in their self-accusations. Such is very much what Van der Kolk says.

Frequently these mental symptoms, in a mild form, are found to have existed for a greater or less length of time before the patient comes under the notice and care of a physician. And in this early stage he may show a control over his distressing feelings, and be able to conceal them from all but his most intimate friends.

So much for the *mental* signs. As regards the *bodily*, there may be a good appetite, but it is generally bad, with a foul breath, and food is sometimes altogether refused. The hands and feet are cold, and the pulse small and contracted. There is sleeplessness—sometimes almost complete. Even when such patients sleep after going to bed, they waken early, and in the morning their state is generally one of greater misery and wretchedness than towards evening; as, indeed, is the case with most melancholics. In not a few instances, pressure on the upper part of the neck causes an unpleasant feeling in the head. Lastly, there is in every case marked constipation, and in most cases this long precedes the mental derangement.

This constipation is associated with states of the colon, which are described in Welscher's work, in an article "De Quibusdam Coli Affectionibus," written by Van der Kolk. The descending colon is believed to be the suffering part in the first instance. Constrictions or narrowings occur in it, of a spasmodic or organic nature, either above or immediately below the sigmoid flexure. When below it, the flexure itself is distended with gas, and widened, lengthened, and often pushed up to the transverse colon. When above the flexure, then the transverse colon is distended, widened, and lengthened, so as often to fall down to the pelvis. These changes and displacements may in some cases involve both the descending and transverse colon, but the narrowings or constrictions have not been observed either in the ascending or transverse parts of the gut. At the seat of these narrowings the coats of the colon may be thickened, but in other parts they are thinned and stretched. Its mucous membrane generally has a healthy look, but in some instances ulcerations occur.

It is Van der Kolk's opinion that in most cases these displacements and elongations of the colon have arisen through previous spasmodic contractions and strictures of the left portion, and that constipation in the first instance leads to these, which in their turn mechanically increase the constipation. And so the gut just above the stricture becomes filled with hardened fæcal masses, while the rest of the gut, back even to the cæcum, is more or less permanently distended with gas. The presence of these fæcal masses at the seat of the constriction is supposed to cause the irritation, which acts sympathetically and injuriously on the brain, and gives rise there to the peculiar morbid action which has been described.

We shall not stop to inquire how such conditions of the colon as have been alluded to would affect the liver, the circulation in the vena cava, the nutrition of the sympathetic, or the sexual organs. Beyond doubt their influence would be considerable, and in this way the mental disturbance might be either simply intensified, or modified and changed in its character. For instance, we have reason to believe from observation, that when irritation, thus induced in the sexual organs, acts on the brain and contributes to the insanity, it gives "a peculiar hue and special character" to the melancholic ideas.

It must not be supposed that any one holds that insanity will appear in every instance, or even in the majority of instances, in which such conditions as have been described occur in the colon. We know the reverse to be the fact. Where it does follow, there must have been in all probability some predisposition or particular excitability of the nervous system. We trace and refer tetanus to wounds without hesitation; yet every one holds that such wounds would, in the vast majority of cases, be followed by no such injurious effects. So it is—by like evidence and like reasoning—that we trace the insanity of many persons to these affections of the colon. The proof is as good in the one case as in the other, and in both is good enough to get even beyond the region of that probability, which in so many matters must be the guide of life.

We find—(1) that these affections of the colon are exceptionally common in the insane; (2) that those of them in whom they are found generally display certain mental phenomena; (3) that, reversing it, where the characteristic mental manifestations occur, we frequently find the local affections; and (4) that when the treatment of such patients is directed by these views, it is often successful.

It depends on the truth of this last statement whether the subject has a practical importance. My own opinion is, that it has a high practical value; and that if medicine is ever to be of much use in averting and curing insanity, one of the ways by which this usefulness will be attained lies in the careful study of the effects on the brain of eccentric and removable irritations such as these.

Thus, a gentleman some time ago called on a physician and stated that he was labouring under great depression of spirits, at once adding that his condition could be explained, for he had been guilty of the most abominable wickednesses, for which his conscience was troubled. During the whole interview he kept accusing himself of crimes which he had never committed, and said that he deserved and expected some terrible punishment, and that life was becoming unendurable. He said that he had been unhappy for a considerable time, but that of late his misery had been greatly increased. He was unable to give any attention to business, so engrossing and overpowering were his distressing thoughts. He was sleepless, his tongue and breath were foul, and he said that he was and had long been extremely constipated.

An aperient was ordered, and he said acted well, but he was not relieved in mind. The aperient was ordered again next day, and again acted well, but with little relief to his distress. A third aperient was given, and there followed a very copious discharge from the bowels of hardened fæcal masses. Immediate and almost complete relief of the mental symptoms followed this, and there was no return.

The fair inference here is, that the view which directed the treatment of the patient was sound. It is probable that in this case the fæculent mass was just above the sigmoid flexure, and that it was perforated or tubular, allowing the passage of the matters which followed the two first aperients.

It must not be expected, however, that we shall often have a good result so quickly or satisfactorily as in this case; for where the sympathetic irritation of the brain has lasted for any great length of time, its nutrition will have been so affected, and such changes will have occurred in it, that we cannot look for an immediate relief, when the eccentric irritation, which has really originated the mischief, is withdrawn. We shall in fact *very frequently* find that the change in the brain has become permanent, and quite beyond all aid from the art of medicine.

The cerebral injuries resulting from eccentric irritations in the colon, of which we have been speaking, are of a very grave character. But there is an unhealthy action of the mind, of a minor, less marked, and less serious character, which results from the same or similar causes, and which is frequently seen. I refer to the condition of mind which so commonly attends what we call an overloaded state of the bowels—constipation, in other words. It is probably within the personal experience of many of my readers, that obstinate constipation causes them to be irritable, depressed, dissatisfied with themselves, and incapable of seeing any but the dark side of events. Now, this is nothing but a minor manifestation of what has just been described as insanity or melancholia. In their nature, and scientifically, the two states are the same. They have the same origin, and are removed by the same means. In both, the distant local irritation influences cerebral action in exactly the same way, whatever that may be. Indeed, as has been well observed by Dr Maudsley, "The earliest and mildest effect of sympathetic morbid action will be, as it is with the effect of vitiated blood, to produce a modification of the *tone* of nervous element, which is functionally manifested in disordered emotion. But the *continued* operation of the morbid cause will be apt to lead to a systematized disorder in the supreme cerebral centres; in other words, to the production of a delusion, or of a definite derangement of thought."

The mental phenomena in these minor sympathetic disturbances are quite of the same character as those found in the major. They are both states of depression and self-dissatisfaction. This is a valuable fact, and goes to support the views we have been expressing; for if we admit the actuality and sufficiency of the cause in the milder mental disturbance, we can scarcely refuse to do so in the graver. It is interesting, again, to find the tolerably steady production of a definable class of mental phenomena by a definable local irritation, occurring in a region and organ far away from the brain, and, to general observation, unconnected with it. A loaded rectum or colon does not produce hilarity and laughter, and tickling the sole of the foot does not produce sadness and gloom. Can we reflect on these things, and not feel that there may be something under them of which our philosophy hath not yet dreamt; that every approach to a knowledge of that something will be an increase of human happiness; and that no higher study could possibly engage the attention?

There is another aspect from which we may fairly regard the depressed states of mind which are at times produced by affections of the colon. It is this. If we call up these feelings of depression by mental or moral agencies, is there any region of the body in which we feel discomfort? When we have a real qualm of conscience, is it not attended with some bodily uneasiness, and where is that situated? Not in the limbs, or the back, or the head, but in the region of the stomach or transverse colon. This is matter of common observation and experience. And it is surely instructive and interesting, if true, to find that irritations in a particular region of the body produce a special train of mental phenomena; and that, on the other hand, uneasiness in that same region of the body is felt when a similar mental state is called into existence by moral causes.

If it were asserted that irritation of the gastro-intestinal membrane, at any point of it, tends to produce a depressed and uneasy state of mind, the assertion would admit of a certain defence. An ingenious speculator might go further, and say that there were some grounds for the opinion that certain irritations of the skin tend to affect the operations of the mind in one way, those of the gastro-intestinal mucous membrane in another, and those of the pulmonary mucous membrane in another,—that, for instance, those of the skin generally produce pleasurable and exciting, while those of the intestinal mucous membrane produce distressing thoughts. In fact, speculations of this nature have actually been adventured.

For instance, Feuchtersleben tells us that—"The view with which Nasse set out, and which, after many other attempts, Klencke, in his System of Organic Psychology, has been lately endeavouring, after Carus, to carry through, that there is a positive reciprocal relation between the several organic systems and the several psychical functions,—that, so to speak, every organ has its psychical signature (though not always according to the overstrained explanation of Klencke), is certainly founded on experience." I would beg to point out, however, that this view of the relation of body to mind, if there be truth in it, passes certainly into error when the precision and size of the psychical signature are exaggerated, for that signature is seldom more than legible, while in most cases it is illegible.

Allied to this speculation of Nasse and Klencke is the observation which Jadelot has revived, "and with which the older physicians were not unacquainted, that the diseases of the three principal cavities of the body are indicated by particular expressions of the countenance," which again represent particular states of mind.

We are at trouble here to avoid all such speculations—contenting ourselves rather with the story of the facts, some of which I fear would scarcely suit such theories.

For instance, it is thought that there is a sympathetic insanity due to an irritation in the gullet, in which the mental phenomena are as unlike as they can be to those believed to be produced by cerebral sympathy with irritation in the colon.

The ascaris lumbricoides occasionally penetrates to the œsophagus, and when it does so, it is sometimes not readily dislodged. It appears to be tolerably well established that its presence there occasionally produces an irritation, which may be reflected to the brain, and may cause mental derangement. It is probable, of course, that so serious a result will only occur in persons with unstable nervous systems, and predisposed, by heredity or by some other cause, to cerebral disease.

Laurent gives the details of a case of insanity apparenty depending on the presence of a worm, 18 to 19 centimètres long, in the œsophagus. The mental symptoms which presented themselves in that case, were those of an acute mania, or rather perhaps of acute delirium, which was continuous and exhausting, and ended in death.

He says that similar cases have been observed by Ferrus, Frank Vogel, Rolland, and Friedrich, and that the morbid mental manifestations had always the character of a continuous mania or delirium, accompanied by more or less limited convulsive phenomena and great prostration.

I need scarcely direct attention to the interest which attaches to the alleged steady character of the mental phenomena. They are produced, M. Laurent thinks, by irritation of the great sympathetic, conveyed to the central organ,—which may bear the irritation without injury, or may yield to it if there exists a preparatory unstable condition.

With reference to such cases, M. Laurent asks: "Is the lesion of the œsophageal nerves capable of determining one form of delirium rather than another?" and he answers this by asking another question. "May not," he says, "the feeling of constriction, or whatever may result from the alteration of œsophageal branches which belong to the laryngeal plexus, or to the thoracic portion of the great sympathetic" (may not, in other words, the irritation, whatever be its nature, from the presence of a worm in the gullet), "have some special echo in the intracranian nervous system?" By way of completing the answer, I would add another question to his, and ask, Have we not just such a special echo when we tickle the sole of the foot? Does the doing so make us sometimes laugh and sometimes groan? Does it not rather make us always laugh?

It is perhaps of importance to point out here, that during those melancholic or depressed states of mind, which are remotely referable to irritations in the colon, there may and do occur periods of excitement amounting sometimes to mania, but these are maniacal or excited states implanted on melancholia, and, when they subside, there is a reversion to the same characteristic depression. It may seem odd to say so, but even during the excitement the melancholia or mental distress is not absent.

When disordered cerebral action, due to sympathy, has lasted for a long time—and, if the sympathetic disorder be active, the time will not be very long—the nutrition of the brain is so interfered with as to produce changes in it which we may call structural. Then, the removal of the irritation will not remove the insanity, which in fact has ceased to be sympathetic, and has become due to disease in the brain itself. I have pointed this out already, but I do so again in order to state that, when such structural or other change has taken place, the mental symptoms may and probably will change considerably, and they may eventually lose all that was characteristic about them in the early stage of the malady, when they depended on a functional sympathy of the brain with some distant bodily disturbance.

In the states of reflex or sympathetic insanity to which we have hitherto referred, the patients are usually not conscious of the existence or situation of the irritation which is giving rise to the cerebral disorder. The melancholic, for instance, does not refer his depression to the colon; the maniac shows no consciousness of any irritation in the œsophagus; the boy did not trace his convulsions and odd feelings to his big toe; the victim of tetanus says nothing of the trifling wound he got; and so on. In other words, there may be no pain or uneasiness where the irritation itself exists.

This, perhaps, is very generally the case, but it is not necessarily so. The *aura epileptica*, for instance, may be an illustration of a conscious reference to the eccentric irritation. But *pain* may cause a disturbance of mental action, and the pain of course is definitely referred to a particular part of the body. The mental disorder thus induced is called sympathetic, and the mode of its production is thought by some to be more or less analogous to that of the mental disorders of which we have been speaking. It is certain that there is a sufficient resemblance to make it desirable to refer to the matter here.

For instance, "a whitlow on the point of the finger is often so excruciatingly painful as to throw the brain into a state of excitement incompatible with sleep, thinking, or sound feeling, and sometimes even into positive delirium." As Dr Andrew Combe remarks, "it is the brain alone which feels intense pain, and it is its affection alone that gives rise to the restlessness, anxiety, and depression which characterize many painful diseases." The delirium brought on by the whitlow differs in no respect scientifically from insanity. So long as it lasts, it is a state of mental disease. But actual delirium, which is the expression of a high degree of morbid brain action, may be absent, and yet there may be present a lower degree of unhealthy action, induced by the pain of the disease, and this may, if long continued, leave permanent effects —often seen in that condition of the nervous system which we can only describe as loss of tone. Eventually, this may prove a great misfortune. When fresh adverse circumstances arise, their injurious action will be promoted by the instability of the nervous centres, which may then be of old standing, but which favour the production of the insanity that concludes the story of the individual. Long-continued painful diseases in childhood have unquestionably the effect of permanently lowering the tone of the nervous system, and of rendering it unfit to come scathless out of trials which should not be overwhelming. I have particularly observed that this condition is apt to follow purulent ophthalmia, scalds or burns, and confluent smallpox. Indeed, when maniacal states of mind occur in early childhood, I believe it will be often found that they are in very close connexion with some protracted painful disease.

It appears to me that these views as to the origin of many cases of insanity are of practical importance. They indicate the means of prevention and of cure, and they disclose something as to one of the ways in which insanity arises, which is not so generally known as it should be. On many of the points discussed, "I may not have informed men more than they knew, and yet perhaps I may have given them occasion to consider more than they do."[1]

This subject will be resumed in the next paper.

[1] Sir William Temple.

ARTICLE II. — *On Artificial Tuberculosis, and its relation to Cellular Pathology and the Growth of Tumours.*[1] By JAMES F. GOODHART, M.B. Aberd., etc.; Pathological Assistant in the Hunterian Museum of the Royal College of Surgeons of England.

IT has been said, "The different steps in attaining knowledge are marked by the acquirement of new laws or rules, expressing that to the whole of a given class of things some mark or property belongs"—and that "whenever things are really definite, as having some marks that group them into a smaller group by themselves, science requires that instead of appearing as part of a larger class, they should have their own name and position."[2]

True as these remarks are when applied to the exact science of thought, they are not the less applicable to that of medicine, since few there are who do not in their earlier years of study and practice frame for themselves certain general laws, which, as experience becomes larger, the insight into the workings of disease somewhat deeper, and the appreciation of minute variations in the conditions of the state called health more real, gradually recede into the background, displaced by the countless exceptions which would appear to put all laws at defiance, and to extinguish the hope, should any yet remain, of ever attaining to a perfect system in medicine.

"Knowledge brings doubts and exceptions and limitations which, though occasionally some aids to truth, are all hindrances to vigorous statement."[3]

Every day the tendency is more and more to make the mind a *note-book* of individual cases, which may serve as standards of comparison, rather than a compendium of rules to be slavishly adhered to. Thus is everything called by its own name, each single case has its own pathology wherein it differs from others of its class, and classification is by this means practically ignored.

While, however, from such an analytical process the life-history of disease is clearly traced, and the links in each chain are gradually ranged in proper order, it is possible that attention, concentrated on minute particulars, may narrow our conceptions of any subject as a whole, and by so doing we may miss entirely the real import of symptoms and pathological conditions, and elaborate an error in the search for truth. In disease, as elsewhere, primary and secondary causes cannot be considered apart; coexisiting phenomena must receive their due value as modifying agents, the warp and the woof of the web must be unravelled together; if otherwise, the fabric is spoiled. Thus has it been with the product tubercle, which, during the last few years, has been so prominently and frequently under discussion. In studying it we were in great danger of losing ourselves in detail and minutiæ, because, omitting to reflect upon the results of our investigations, we did not notice to what end they pointed. Latterly, however, important clinical and pathological facts have been brought forward, helping to point out the relationship of tubercle to other morbid products, but additional evidence is still wanting ere it can be rescued finally from the time-honoured category of *unorganizable fibrinous exudations*. It is my object to bring forward some such evidence in this paper; and though the ideas embodied in it may not open up any new line of thought, they will, I think, inasmuch as they are the result of independent experiment and observation, strengthen somewhat the position of those who have already pushed the doctrine of artificial tuberculosis to what must be considered their legitimate conclusions, and help towards obtaining for the tuberculous state its true position in a pathological scheme, as the connecting link, so to speak, when viewed with its surroundings, between various diverse morbid conditions.

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[1] Being the substance of an essay which obtained honours at the Medical Graduation at Aberdeen, in April 1871.

[2] An Outline of the Laws of Thought. By Archbishop Thompson, F.R.S., etc.

[3] Companions of my Solitude, 6th ed., p. 21.

In the first place, then, what is tubercle?

All the older writers on this disease may be classed in three groups; of which one, including Rokitansky, Bennett, Ancell, and Lebert, declares it to be a low formed exudation; a second, to which belong Williams, Henle, and Addison, that it is a retrograde metamorphosis of pre-existing tissues; while MM. Lallemand, Cruveilhier, and Andral considered it to be a concrete form of pus. Opinions were thus divided till M. Villemin published his "Researches on the Inoculation of Tubercle," in 1865. Those experiments I afterwards repeated myself, making use of blood, pus, tubercular sputa, cheesy matter from tubercular ulcers, cancer juice, etc., for the inoculation. It is quite unnecessary to give a detailed account of these here, now that the results of similar experiments are well known; suffice it to say, that my own observations completely coincide with those of Drs Burdon Sanderson, and Wilson Fox, published after most of mine were made,[1] and which show that—

1*st*, Tuberculosis may be with certainty produced both in the rabbit and guinea-pig (in the dog also, according to Cohnheim), either by the production of an abscess in any part of the body, by the introduction of foreign matter under the skin, or by injecting pus, tubercular matter, etc., directly into one of the serous cavities.

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[1] Dr Alison, of Edinburgh, had, as early as 1829, published the results of some experiments made by Dr Kay, at the Royal Infirmary, in which the introduction of mercury into the trachea of the dog had produced an apparent tuberculosis. In the centre of each tubercle, however, a small globule of mercury was found. This probably made the results appear less conclusive than they would have been, had the foreign matter been distant from the secondary tuberculosis; and to this cause may probably be attributed the fact, that these did not awaken that amount of discussion to which they were certainly entitled.

2dly, The new product tubercle is a formation of tissue composed of large numbers of lymph-like corpuscles and nuclei embedded in alveolar spaces.

I wish also to insist on the fact, that the disease attacks the animal in one of two ways—either by direct contact of the morbid material with a secreting surface, on which it can engraft itself, which may be called primary infection; or else, by the production of a cold abscess, to borrow the phrase, it extends along the lymphatics, the system being affected secondarily as the result of the abscess. The former plan generally obtains where pus or contagious matter is brought into direct contact with the pleura or peritoneum. Thus, in one of my experiments, some pus expectorated by a patient affected with tuberculosis was injected into the abdominal cavity of a guinea-pig; the animal died in thirteen days' time, and I found general miliary tuberculosis of the omentum and mesentery. The solid organs and the lungs only showed signs of commencing disease. The second method is ordinarily seen when a subcutaneous inoculation has been made.

The ultimate microscopical appearance of this new, or adenoid material, as it is called, is the same in all the tissues attacked by it, whether it be produced artificially or otherwise; but the details of its progress vary somewhat, according to the site of the disease, and the mode of its onset. By the so-called primary infection, a direct process of seed-sowing and growth takes place. By the secondary, a more complex method is necessitated.

Thus, in the brain, as is well known, the new formation occupies the lymphatic spaces immediately around the vessels, and is nothing more than an excessive development of the cells normally existing there. In the omentum also, much the same process goes on. I find similar lymphatic spaces existing in large numbers, and the growth commences within these, as in the brain, immediately outside the vessels. From within it spreads to the glands and fat-depots immediately outside the perivascular spaces (possibly this may be brought about, as I have reason to think it may be, in inflammatory conditions, by the molecular disintegration of the fat-cells), the lymphoid cells gradually increase in number, till at last the adipose matter entirely disappears, and what are known as tubercles are found.

Thus far, then, be it observed, the disease is confined to the vessels and parts immediately outside them, to the network itself, while the meshes of the net are still unattacked. The delicate connective tissue which fills in these spaces appears to be invaded from the parts already attacked, and to be only a stage later than that which has already been described.

The connective tissue nuclei swell out, and, proliferating, join on to neighbouring cells, till, from the diseased structures outside the vessels, there juts out a process of swollen granular cells; this gradually extends into the parenchyma, forming, so to speak, an animal spongiole; small tubercles form on these and in their vicinity, and it seems possible that these spongioles may ultimately form lymphatic channels, after the manner of the formation of blood-vessels; but I have been unable in any instance to detect the intermediate stage of partial formation of a canal. Whether the infection be primary or secondary seems then to make this difference, that, whereas in the former, where the inoculating matter is brought into direct contact with a moist secreting surface, all parts of the membrane are attacked simultaneously; in the latter, the parenchyma only suffers by a gradual process of invasion from the perivascular spaces. I have already given one illustration of the first method, in the case of a guinea-pig, where the disease was produced artificially in the omentum; let me now add another, where it occurred apparently in the same way in the brain of a child.

CASE 1.—William B., æt. 19 months, was admitted to the Evelina Hospital in 1869, under Dr Hilton Fagge, with all the symptoms of tubercular meningitis. He quickly became comatose, and died in three or four days. At the post-mortem, after taking off the calvarium and dura mater, the whole surface of the brain was found to be covered with a thick layer of green pus, the same material was found at the base, a little way down the cord, and in the ventricles. On washing this away, and looking for tubercle, none was found. That is to say, no nodular growth had taken place around the vessels, as is usual in this disease; but when the membranes were examined microscopically, after being washed and stained with carmine, then multitudes of small points of adenoid growth could be seen all over the field, and localized in no one part more than another. The lungs also were scattered over with yellowish punctiform dots. No gray tubercle existed anywhere.

In the lungs, the growth takes on the same corpuscular form, and is found distending the alveolar wall. It is also accompanied by what Dr Sanderson calls *catarrhal pneumonia*, which is an increased epithelial formation from the surface of the air vesicles.

Something like this, then, is the present view of tubercle; and assuming, as indeed we believe, that it is a correct one, certain conclusions may be drawn from it:—

1*st*, That tubercle is not an exudation of fibrinous cacoplastic material, nor a retrograde metamorphosis of pre-existing tissues.

2*dly*, That it is essentially a growth[1] just as much as is any tumour, and that it is perhaps *generally*, but by no means always, an overgrowth of the elements already existing in the parts affected.

Now, what has been proved to be true in the lower animals concerning the production of tuberculosis as the effect of a caseous abscess, is probably true of man also, save that it does not follow of necessity because a patient has a chronic abscess or a suppurating sore that he must become tubercular. What I have to do, then, will be to show that such a sequence of events does at any rate occasionally take place, and to offer an explanation, if any can be found, of those cases of prolonged suppuration in which tuberculosis does *not* occur, and also of those at first sight even more puzzling ones, in which tubercle is found unassociated with manifest suppuration or exciting cause, and which have all till lately been ascribed to diathesis.

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[1] Laennec calls tubercle a growth, or rather he speaks of the "growth of tubercle," but it is clear that in making use of the word, he intended to express, not that tubercle had any of the characters which we now attach to "tumour," but rather that it had a tendency to increase, that increase being a process of accretion or accumulation—a state of passivity, not of activity.

Those last-mentioned might be disposed of at once according to Buhl,—who says that there is a *constant* dependence of miliary tubercle on pre-existing cheesy products,—did I agree with him as to the facts; but, on the contrary, looking over the post-mortem records at Guy's Hospital for 1868–9–70, I find, of 166 cases of tuberculosis, 80 or nearly half have no mention of any suppuration or cheesy glands, or anything of the kind; and though possibly this proportion is too high, and would be altered if a larger number of cases were collated, still I think some such do occur, and there is no *necessary* connexion between cheesy deposits and tubercle. One no doubt often does follow the other, but I hope to show that a simple inflammation, if continued long enough, will also end in the same way.

It will be found, then, that the cases of tuberculosis in man which come under notice fall into two classes—(*a*) Those in which it coexists with cheesy deposits; (*b*) Those in which it exists alone.

The former class, the one linked more especially with the results of our experiments, may be illustrated by the accompanying cases:—

CASE 2.—William W., æt. 40, came to me as an out-patient when House Physician at Guy's Hospital. He gave this history: That he was in perfect health till four and a half months ago. He was driving a horse which suddenly reared, and his chest became crushed between the shaft and the wall of a house. He immediately brought up some blood and phlegm, and continued to do so for ten days. He was soon afterwards obliged to give up work, and began to waste. Fourteen days before admission he complained of great tenderness over the sternum, which is now hot and uneven, and has all the appearance of having been fractured. He was afterwards admitted an in-patient under Dr Moxon, and died in the Hospital. The account of the post-mortem is an abstract from the Guy's post-mortem records:—

Body much wasted. Sternum separated at the junction of the middle and lower third into two portions, and both ends are carious. There is cheesy or pasty pus extending towards the skin, and collecting there in a subcutaneous abscess. A second abscess was found in the abdominal wall of the left flank. It was encysted, and could be taken out easily. Well-marked tubercular phthisis existed in both lungs, especially of the right. The apex of the right lung posteriorly showed a considerable cavity. The other viscera were healthy.

CASE 3.—Charles S., æt. 45, admitted to Guy's under Mr Poland, in April 1869. The patient is a farmer. His brother died of phthisis. He has always enjoyed good health and is very temperate. For the past twelve months he has had great difficulty in passing his urine, the stream has been very small, and he has passed blood. Complains of no pains in his loins. On 13th April, it is noted that he has a bad cough, and when examined soon after by Dr Fagge, extensive disease of both lungs was detected, with crepitation and consolidation. At the post-mortem the lungs were full of gray tubercle in an early stage, but becoming cheesy. Much cheesy pus was found in the pelvis of the left kidney, with many gray tubercles. Some caseous abscesses existed in the cortex of the kidney.

CASE 4.—Eliza A., æt. 21. Has been married three years. Has had two children and one miscarriage. A fortnight before coming under treatment she began suddenly to increase in size. She felt very ill, and had much abdominal pain. The abdomen was universally dull. The urine was normal, the heart-sounds also. At the post-mortem a suppurating ovary was found, with a general tuberculosis. Numerous recent yellow tubercles were found in the lungs. The abdomen contained a large quantity of thin pus, which distended it much, and the peritoneum was covered everywhere with tubercles of exactly the same appearance as those in the lungs. The viscera were adherent to each other. No ulceration or tubercle existed in the intestinal canal. Many recent yellow tubercles were found in the Fallopian tubes.

CASE 5.—Edward C., admitted into Guy's, 31st March 1869, under Dr Hilton Fagge. From my own report of the case I find that both his father and mother were healthy. No cough or consumption known in the family. He was quite well ten months ago, when he fell down stairs and struck the back of his head. This did not affect him much, and for five or six weeks he enjoyed his usual health. He then fell down in a fit, in which he bit his tongue, and was very livid. He has had an odd manner since, and has dragged his left leg when walking.

At the inspection a large tubercular mass was found in the pons. Outside this mass was a layer of gray gelatinous material, which, from Dr Moxon's report, consisted of a fibrillar and vascular matrix containing faint nucleated corpuscles. The tubercle itself was very firm, like cheese—yellowish, opaque, its outer surface vascular, and having numerous minute miliary tubercles upon it.

CASE 6.—Henry W., 39, admitted into Guy's, under Dr Pavy, in September 1869. He had suffered more or less from cough for eighteen months, and had been drowsy and stupid for a fortnight. When admitted he was comatose, but some phthisical mischief at the left apex was detected.

Autopsy.—An abscess three-quarters of an inch by an inch and a half existed in front of the sternum, opposite the second costal cartilage. The brain-membranes contained much tubercular deposit and lymph. The lungs were adherent by old and firm membranes to the chest-wall at the apices. Large cavities and gray tubercle existed lower down.

CASE 7.—*Miliary tuberculosis of the testis following upon chronic disease.*—Richard C., æt. 56, in Guy's under Dr Habershon, in March 1870. At the post-mortem, made by Dr Moxon, the right pleura was found closely adherent. An old cavity with fibrous induration was also found at one apex. The lungs were stuffed with recent miliary tubercles. The prostate had a large cheesy patch in its right side. The left cord, vesicula, and epididymis were in a state of caseous inflammation, and the corresponding testis had in it a very large crop of miliary tubercles. The duct was diseased to its end in the veru montanum.

CASE 8.—*Yellow tubercle with acute tuberculosis in the brain.*—Jeremiah D., æt. 7, under Dr Wilks in 1870, in Guy's. His friends give no history of any fall. He has had no discharge from the ear. He began to complain of his head seven months ago. The pia mater showed acute tubercular formation, a large cheese-like greenish mass occupied the upper right central part of the cerebellum. It had a pinkish layer outside it.

CASE 9.—*Old scrofulous disease of the testis, with miliary tuberculosis.*—John B., æt. 53, under the care of Dr Habershon at Guy's Hospital. He was under Mr Bryant's care two years ago for disease of the testis. On admission he did not seem very ill, but his temperature was high. His breathing soon became difficult, and physical signs of broncho-pneumonia were found. At the autopsy, both lungs were stuffed with miliary tubercle. Recent tubercle also existed in the pericardium, intestine, liver, spleen, suprarenal capsules, and kidney. The prostate had an abscess in it at the deepest part of its tissue, on the lower aspect of the urethra. The vesiculæ seminales were suppurating and ulcerated. The epididymis in a state of caseous suppuration, and adherent to scars in the scrotum. The testis had many miliary tubercles in it, otherwise it was healthy.

Of the eight cases here detailed, 2, 5, 7, 8, and 9 are perhaps more valuable than the others, as the extension of the disease was more direct, but even in these it is quite open to any one to think that no real extension occurred at all, but that all that was found was the result of a constitutional state. Neither view admits of absolute proof; but on contrasting such cases as those given with the following one, where the disease was produced in a rabbit, probabilities would appear to be in favour of the former hypothesis.

A rabbit was inoculated in the neck, on 7th November 1867, with tubercular sputa. The animal was killed on 18th March 1868, nineteen weeks after the operation. A short distance from the puncture of the injection-syringe a large mass of cheesy material was found, and around the margin of this, spreading away for half an inch into the surrounding areolar tissue, came a large number of small miliary tubercles. No enlargement of the axillary glands had taken place. The lungs contained much tubercular matter, both caseous and miliary. The liver and cæcum also were tubercular. Here, as in cases 5, 7, and 9, acute growth of tubercle was found spreading from the margin of the yellow deposit. Many other cases may, I believe, be explained in the same way, such as the extension of miliary tubercle from an ulcer in the intestine, or the lighting up of tuberculosis secondarily to scrofulous abscess in the kidney, or such as the following when they occur:—

From the post-mortem records at Guy's, No. 87, for 1870. John S., æt. 11, under Mr Poland's care. The right hip was disorganized, and a collection of pus extended up under the pelvic fascia. Death took place from acute general tuberculosis.

How is this extension brought about? Dr Sanderson says, by means of the lymphatic system; and it seems probable that this is so in *many* cases up to the very termination of the disease, and *generally* so up to a certain stage; but bearing in mind that the disease frequently occurs first in the neighbourhood of the vessels, and that when it does, it is generally rapid in its progress and universal in its distribution over the body, I believe that the vascular system also plays an important part in its production. For the further elucidation of this point, it may be as well to call to mind two or three important facts, now, I believe, very generally admitted, and by the mere statement of which the whole process becomes clear:—

1*st*, That cells in the animal just as much as those in the vegetable world will grow and produce successors when transplanted from one place to another.

2*dly*, That cells in a state of over-activity seem to possess the power of inducing a like activity in neighbouring cells. Pus, for example, has this power.

3*dly*, That blood-globules, more especially the colourless ones, have intimate connexions with the surrounding tissues, and probably escape largely into those tissues.

Remembering these points, the history of cases, such as I have given, would probably be such as the following:—

A follicle, of the intestine for example, gets choked with its own secretion just as a sebaceous gland may get clogged, a small ulcer forms as a natural result, and irritant matter is conveyed to the nearest lymphatic glands. This leads to an exaltation of function of the gland, cells are made more quickly, and in proportion to the rapidity of cell-formation within it, is the unstableness of the workmanship, and new cells are sent forth which are but ill matured, and destined to live a more rapid round of existence. These pass into the bloodvessels (it is supposed), and in their turn exert their influence on the tissues. Judging from the way in which the tissues are invaded, I believe they pass out into the surrounding parts, and, growing themselves, produce a like growth in the cells with which they come in contact. Thus, ill formed as they are, their progeny would be fashioned after the same bad model. It seems probable also that this *infection* (truly so called) of the whole system only takes place provided that the gland function be only slightly increased, and somewhat permanently so,—a mere temporary activity doing no harm, while very abundant cell-growth causes a too rapid cheesy degeneration in the gland or centre of cell-formation, and, by blocking it up, for a time arrests the general contamination of the system. In this way we might account for a tabes mesenterica, with but slight or no growth of tubercle elsewhere.

Again, to take an instance of primary infection, such as Case 1. Its history seems to be that active cells—that is to say, cells in a state of transition, on their way to a higher, or, it may be, only a more advanced, development—are injected into, or formed in, a serous cavity. They attach themselves to the moist surface, and either grow themselves or growth is induced by their presence.

The other class (*b*) is made up of all cases of acute tuberculosis, where no existing cause in the shape of pus can be discovered. As a class, it takes in more especially tubercle in the lungs, and it will also include cases of pneumonia, hæmoptysis, and chronic bronchitis, which end in tubercular disease. Strictly speaking, however, this is not a group of which it can be said that pus is entirely absent; but though it may be present, I believe it to take no necessary part in the production of the disease.

As a typical example of the class, and as a somewhat interesting case in itself, I give a short note of a case which came under the care of Dr Rutter at the Brighton Dispensary. I am much indebted to him for his kindness in allowing me to make use of my notes of it.

CASE 11.—George D., æt. 39, a brewer, came to the Dispensary, stating that he was quite well till a year ago; that up to that period he had never had a cough, or indeed any other illness. During his work he strained himself lifting a hogshead of beer. Fifteen minutes afterwards, or thereabouts, he began to spit up blood in small quantity, and this gradually increased with the cough till towards the end of the day, when he brought up a large quantity of blood (he says a quart) at one cough. He continued to spit blood for two days, but has never done so since. A week after the first hæmoptysis, he had much pain in the right side, beneath the right nipple. This lasted some time, with shortness of breath, and even still troubles him now and then. He still has a good deal of cough. His mother died with cough, æt. 40. He is strong and healthy-looking, being robust and muscular. The chest expands feebly on both sides, but more so on the left than the right, and on this side also the percussion note is of higher pitch. On auscultation he has deficient respiration at the left apex, with much submucous rhonchus and stifling of the sounds. The expiratory murmur is rather prolonged and rough. Below the right nipple the ribs are depressed towards the pleural cavity, and there is dulness on percussion. Small sharp crepitation can be heard during inspiration. There is no bronchial expiration. This patch is very localized, being only about three inches in diameter.

Note.—May 1871.—The patient ceased to attend as an out-patient, and on making inquiries for him at the brewery a few days back, I learned that he had become gradually weaker and unable to work, and had just left the town for a consumption hospital in London, but to which he had gone was not known.[1]

Cases such as this are explained by two, I think we may venture so to call them, pathological laws.

1*st*, That, under certain conditions, continued irritation will produce, first, cell-growth in excess, and then, if hypertrophy and nutrition be not commensurate, what may be designated as purposeless growth.

2*dly*, That rapidity of transition from birth to death is in direct ratio to the rapidity of development. Just as a watch with a broken cylinder will run out a length of chain in a few seconds, which, in its sound state, it would have taken hours to accomplish; so, I apprehend, it is with cells. The shorter the period of development, the shorter will be their term of life; and though passing through exactly the same stages as a healthy and well-toned cell would do, they are set to a different time, as it were, the passage between the two poles of their existence being much accelerated. In proportion to the length of time that has elapsed, and the number of generations gone through, will be the divergence of the progeny from the original type, and the less the likelihood of reversion coming into play. Carrying these points with us to the region of tubercle, we may associate them with the following facts:—That in our lungs we possess a large secretory and excretory surface, the cells of which, from the very nature of their occupation, are especially prone to change or hurry in the cycle of their life; and that, under the abnormal conditions in which we live, irritating matter is always present in the air to produce the hurried action. This being so, we might wonder that every one is not tubercular, but that it is evident that Nature has provided us with nicely-balanced powers: thus, a slightly-increased growth is met by a slightly-increased degeneration and absorption. Destroy, however, the balance either by a constitutional state, on the one hand, or an increase of local excitement on the other, and the first law holds good. What is the result? Increased epithelial formation in the first stage, growth of adenoid tissue in the second, and, should the conditions still continue, a regular invading tuberculosis is established—a disease which, if malignancy means anything, is quite as much so as the truest cancer.

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[1] Other cases of the same kind are detailed in the Transactions of the Clinical Society, by Drs Baümler and Herman Weber, 1869, arts. xviii. and xxvi. See also Clinical Lectures on Pulmonary Consumption, by F. Von Niemeyer, Syd. Soc. Trans., 1870. Trousseau also, in his article on Hæmoptysis, says, "Elles appellent vers les organes réspiratoires un mouvement fluxionnaire qui peut déterminer l'évolution d'une phlégmasie plus ou moins dangereuse," etc.

Various collateral circumstances will also act somewhat in determining the extent of pathological change. For instance, in the first stage, or that of catarrhal pneumonia, according as the irritation is applied to an extensive surface or the reverse, and the cells, so to speak, run true or erratically, will be the production of an acute lobar, a vesicular, or a caseous pneumonia. The second stage will depend for its production mainly on two conditions—the *tendency* to cell-change in the patient, and the chronicity or otherwise of the first stage. If the cell-growth is active, a general tuberculosis will probably be established; while, if the exciting causes alone are sufficiently persistent, adenoid formation will also take place to a more limited extent, but without probably any additional stimulus form a constitutional state; I say *probably*, because it would be impossible to demonstrate with certainty the absence of such a state, the strongest evidence that could possibly be brought forward being no more than the negative test, that the disease had not hitherto shown itself.

My belief is, then, that *all chronic pneumonic changes consist in part of adenoid formation.* This view requires corroboration. The only evidence that I shall here offer on the point is, that in five such cases I found extensive thickening of the alveolar walls, with lymphoid tissue, a condition precisely analogous to that of tuberculosis, either natural or artificial, except that the round millet-like grains were absent; and this is probably not a difference of kind, but only of degree.

We must also remember that the ordinary result of a long-standing pneumonia is a permanent induration of the lung from increase of its fibrous tissue, and in connexion with this state, the undoubted fact that miners, stone-masons, or any people living in dusty atmospheres, are frequently affected with chest disease, while after death is found, not a tubercular, but a fibroid, condition of lung. If, in such cases, the earlier condition is, as I say, one of growth in the alveolar walls, the excess of fibre-tissue found post mortem must be regarded as *lymphoid tissue become fibrous*, the corpuscles having all been utilized by the proper tissue of the wall for its own repair and growth. This is the very termination one might expect from a chronic irritation proceeding continually in hardy men. It may be said by those who blame the diathesis rather than local conditions, that tuberculosis is but rarely associated with chronic bronchitis—a class of cases in which, according to the views expressed, it ought never to be absent. That the two are so rarely found together is because the effects of the irritation are neutralized by the emphysema. The ill-aerated blood, and the semi-stagnation in the lungs, are conditions unfavourable to cell-life, and thus when tubercle does occur, it is small in quantity and shrivelled, instead of being succulent and translucent. It is, therefore, named by Dr Moxon "*starved tubercle.*" For the same reason is it, probably, that tuberculosis and heart-disease are but seldom associated.[1]

The third stage of the disease, that of spreading to neighbouring tissues, is well illustrated by the following short note of a post-mortem, made a few months back. The case was one of phthisis. The right lung had its upper lobe stuffed with tubercle; at the outer part of its base a small adhesion, half an inch broad, had formed between it and the upper angle of the lower lobe. At this spot, and nowhere else, was the lower lobe attacked. When examined microscopically, both the lymph which formed the adhesion, and the tubercular lung itself, were in exactly the same state.

But if it is the fact that caseous and suppurating deposits are liable to set up a tuberculosis, we shall find, it may be said, in surgical wards a large amount of such disease. Is this so? Several hospital surgeons have told me that it is not so very common, and this opinion is borne out by post-mortem records, for of 147 cases of joint-disease, with prolonged suppuration, inspected at Guy's during the last seven years, I find only 33, or less than a fourth, were affected with tubercle. Facts, then, are hardly in harmony with theory. An explanation, however, of this discrepancy can be found, but for the sake of convenience it has been postponed till the formation of pus has been considered. Before now leaving this, the first division of our subject, a word must be said on the metamorphoses of tubercle, seeing that upon the opinion which is held with regard to one of these, the formative, will very much depend the value one may be inclined to attach to some of the observations that have been made. These metamorphoses are chiefly two, a formative and a retrograde change. Tubercle has long been called an unorganizable material; but it is truly no such thing: at least, I have been often struck with the fact, first pointed out to me by Dr Moxon, that tubercle may often, when examined microscopically, be seen to merge into well-formed fibre-tissue;[2] and in strong support of this observation comes a fact, the truth of which I think most pathologists will admit, that it is comparatively rare to find a pair of lungs, no matter what the cause of death, in adult persons, with the apices entirely free from either tubercle or an excess of this fibrous tissue. If tubercle is absent, then a certain amount of induration exists alone, while, if it is present, except perhaps in the most acute cases, the two conditions are found together. This bears out and justifies the idea before advanced, that the two products are only modifications of tissue originally common to both.

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[1] Chronic bronchitis does occasionally produce phthisis. Four such cases were lately brought before the Medical Society of London by Dr Andrew Clarke, but they are certainly exceptional.

[2] For observations on a similar change in tubercular omentum, see two cases recorded by Dr Payne in the Transactions of the Pathological Society, vol. xxi., 1870, p. 198. A full statement of Dr Moxon's views on this subject, and the conclusions at which he arrives, may be found in the "Medical Times and Gazette" for 1871, vol. i., in a lecture entitled "Inflammation and Tubercle." Most of those conclusions I believe I may consistently accept, at the same time that I take up a somewhat different position.

The retrograde change is a caseous degeneration which it undergoes like most other cells of animal life. It consists essentially of a breaking-up of the interior of each globule into fatty-looking molecules, and of an ultimate disintegration of the whole mass. It may occur as the result of an atrophic or an inflammatory process.

On turning now more directly to those morbid changes with which the tuberculous state is closely associated, two difficulties arise and somewhat hamper our consideration of them. One is the desirability of avoiding repetition as far as possible; the other, that the extent of ground is large over which the subject ranges. Neither can be completely overcome, for it is impossible to treat the question in any degree fully; and of necessity the details required for the elucidation of the first part have already anticipated much that must follow. Tubercle may be examined from many standpoints; for instance, in its relation to normal nutrition, to hypertrophy, atrophy, inflammation, suppuration, or purposeless growth. Inasmuch as these questions cannot all be discussed, it will be better to contrast it more especially with *the inflammatory process* and its two principal modes of termination, viz., organization and suppuration, and then to notice a few of the many points of interest which appear to link these processes with others which belong to the class more usually designated as malignant or purposeless growths.

It would be well, before setting out on the inquiry, to define our terms; but that, unfortunately, "inflammation" hardly admits of definition, but only of description. I shall here only enter shortly upon that part of it which deals with one of the essential features of the process—the behaviour of the vessels and their contents.

Virchow, in his "Cellular Pathology," lays it down that the products of inflammation are due to the multiplication and degeneration of pre-existing cells, more especially of those of the connective tissue; but the question, "What is it that starts this proliferation?" is the one that more immediately concerns us. Older writers looked upon the whole thing as entirely an affection of the vessels, and divided it into stages, such as hyperæmia with acceleration of the blood-current, hyperæmia with retardation, stagnation, etc. After making three or four such, they came ultimately to that of rupture of the bloodvessels and extravasation of the corpuscles. Waller, Cohnheim, Charlton-Bastian, and others have come forward of late years and shown, from experiments on the lower animals, that there is a free escape of the corpuscles into the surrounding tissues *without any rupture*. The experiments of Dr Norris also rather support this view, and show, perhaps, how the process may possibly be accomplished. Whether there be any rupture or no, however, seems, as far as the result is concerned, to be but of slight importance, save that if it is so, an active agency is shown to be at work, while the mere escape of the globules by means of a laceration might, and probably would, be a passive, and therefore so far accidental, condition. All will then, I think, admit that, either by rupture or migration, the corpuscles get outside the vessels somehow, and this is the great fact to be remembered. Why is it so important? Because, when considered in connexion with what has been said of tuberculosis, it means the escape of *active* or immature material into a part where it can obtain rest and nutriment—in fact, all the conditions favourable to the perfecting of its development. Of the further stages it may be said, from what I have observed in mice, after injuring the peritoneum, and then killing them by chloroform, that in three or four hours the omentum has many granular corpuscles about it which are not visible in the healthy state. In eight or ten hours similar corpuscles are seen to mingle largely with the adipose collections of the part, the normal cells of which have by this time many of them broken up into numerous small molecules. Later on still, in from twenty-four to forty-eight hours, all the elements of the tissue seem to be in an active state, and what appeared in health to be but delicate lines of connective, now swell out, and become well-marked tailed cells. The process traced thus far may, we know, go on either to organization or to pus-formation. Therefore, pus and formed material may arise from the same elements; and inasmuch as the chief product in an inflammation is cellular, they are probably both formed out of lymphoid corpuscles. That pus consists entirely of lymph-corpuscles escaped from the vessels, I am unable to believe, seeing that such large quantities will form in a few hours, and that similar corpuscles are probably largely formed at the expense of the ordinary fat-cells; neither is there any reason for binding ourselves by such an hypothesis if we recognise the law already referred to, that cells in a condition of hyperactivity possess the power of inducing a like activity in neighbouring cells. Allowing this, it may be said that the inflammatory state has for one of its chief features the escape of lymph-corpuscles into the tissues outside the vessels; that these bodies, from their nutritional activity, immediately proliferate, and by producing a like hurried action in the neighbouring tissues cause the elements of the *whole part*, not themselves alone, to partake in a rapid cell-growth. It is the rapidity which constitutes the disease, and large numbers of immature cells are its product. Since, then, cell-proliferation is common both to organized lymph and also to pus, what is the latter as distinct from an inflammatory product which stops short of suppuration? and how does this differ from the normal nutritive processes? Their respective differences may be illustrated thus:—Cell-life has three stages: 1*st*, One of development; 2*dly*, One of maintenance; 3*dly*, One of degeneration. Further, "there are facts enough to prove that the power which can be exercised in a germ is limited, so that the capacity of assuming the specific organic form cannot be communicated to an indefinite quantity of matter; and there are also enough to justify the expression that the power thus limited is, in some measure, consumed—first, in the development of every new structure; secondly, in less measure in the growth and maintenance of those already formed."[1] Healthy nutrition, then, is growth under certain restrictive influences, whereby only part of the power inherent in the germ is consumed, and energy is still reserved for development. In inflammations in which the product is organizable, the growth is excessive, and maintenance usurps the place of development; the new material is, therefore, of low formation. But inasmuch as the cell excess may vary in quantity in different cases from 1 to ∞, so will the development of the product vary; and inasmuch also as it must be supposed that there is a certain amount of force in all living things over and above that which is actually needed—a reserve force—in slight inflammations, or in robust people, the excess of cells can be fairly supplied with the power required, and thus it happens that the development is good. In suppurative inflammations the growth is in great excess of the formative power, neither development nor maintenance can be carried on, and degeneration, and indeed death, commence even at birth. But, be it remembered, the act of *dying* is not death, and though a cell be on its decline it may still be capable of much mischief; and so, I apprehend, it is with pus.

Now, it so happens that the most common, indeed nearly the sole form of cell-degeneration known, is one of fatty change—each cell becomes full of minute drops of oil, which are afterwards discharged by its breaking up. From this cause all fluids containing such bodies, or even lymph-cells, which have some close connexion with fat-tissue from their earliest formation, when in considerable quantity, have a yellowish and creamy appearance, and have been lumped together as purulent collections. We have thus come to look upon *the thing Pus* as a specific entity, which, when examined microscopically, can be recognised as such, from the fact that it is composed of rounded cells containing eccentric nuclei, etc. Further, having once recognised the presence of these bodies, we say that such fluid with its contents is incapable of passing into more permanent structures or to a higher development. But, surely, this is a most erroneous view; for just as an organizable inflammatory product may vary in its component cells from those which are perfect in form to others which are only just able to hold their own, so is it with pus, which may be anything, from a number of cells with some capability still in them of further existence, to those composed of positively dead material. The fluid being partly produced by the liquefaction of the dead cells is, of course, so far dead; but it does not follow that living corpuscles floating in it must of necessity die also;

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[1] Paget's Lectures on Surgical Pathology, ed. 1870, p. 119.

rather is it, I think, more probable that some might be able to save themselves by the disintegration of the perished ones.

The difference, then, between growth, formative inflammatory products, and suppurative ones, is mainly a question of degree—the same process, cell-proliferation, goes on in all; and so long as the part, or the whole body, is able to supply the demands made upon it for these embryonic cells, so long will there be a capability of tissue-formation, but beyond this degeneration and pus-formation will begin. It is no doubt quite true of surgical pus, if I may use the expression, when we see it fresh from an abscess, that much of it is really dead. All I wish to urge is, that what it is now, when evacuated, it was long before, as far as its characteristic cells are concerned, from the instant that they entered on the stage of fatty degeneration; but more than this—at what time each individual cell dies, or when it may be said to be positively dead, there is no evidence to show. It may also be said that, though this fatty change, of which we have been speaking, is more especially prone to occur in lymph-glands or epithelial cells from moist surfaces, precisely the same condition may also occur in all rapidly-growing cells, or in the most highly-organized tissues, as nerve or striated muscle. Having traced the inflammatory process thus far, we may recall to mind that, in speaking of tuberculosis, two modes of onset were described—one by means of the vessels, the other by a direct stimulus to an absorbent surface. And now, again, in inflammation, I have to say that nutritional irritability may probably be brought about by the same two modes, though, strictly speaking, the two should come under one heading, seeing that we have proof only of the escape of corpuscles after the application of some irritant. Alcoholic cirrhosis would seem to supply an example of the first, and pneumonia of the second, form.

If now we compare in the lung the progress of the two diseases, pneumonia and tubercle, we find that, in both, the first stage is excessive epithelial development—that the inflammatory disease, though generally going no farther, may from thence pass on, if it be at all chronic in its course, to adenoid formation, and terminate either in a caseous pneumonia or a fibroid induration, the latter being the more common; while tubercle, always reaching the second stage, may, in its ending, become fibroid, though its disposition is usually towards softening. We may say, therefore, that the two affections, starting from the same point, usually diverge slightly in their course—the one ending in a formative, the other in a degenerative change, but that *both* not unfrequently terminate in precisely the same manner. It is often urged by those who regard pneumonia and tubercle as quite distinct diseases, that the two are antagonistic in their results—that in the one there is almost always resolution, in the other as certainly destruction of tissue; and this objection holds good of acute lobar pneumonia and tubercle. The acuteness of the attack, however, is, at the same time, the explanation of the divergence of results; the duration of the disease, and the danger of tuberculosis, being in direct ratio to each other.

Again, it is said, one always attacks the apex, the other nearly always the base of the lung; but this difference is due, I cannot but think, more to the accident of position than to the nature of the two complaints. The lower lobes are supplied with more blood—they are more directly supplied with the fresh inbreathed air, and the evacuation of the foul air is more complete than in the upper lobes, while the latter are perhaps, in addition, more fully distended and stretched. It is true that such disadvantages are, at most, but slight ones, but, small as they are, they would, on *a priori* grounds, be quite sufficient to determine that an acute disease coming by blood or air should attack the lower lobes; while that a chronic disease, or one that advances little by little, should attack that part of the lung in which the air is slightly less pure, and which is more constantly at work, is also just what we should expect.

The other objection, that tubercle is unorganizable, is, as I have endeavoured to show, not a valid one; still, it must be said, it was partially true of the material which formed the basis of the opinion, viz., cheesy deposit. Such, no doubt, are unorganizable to the same extent that we have allowed pus to be—they both consist in great part of dead material, though by no means necessarily entirely so.

With such views of tuberculosis and pneumonia, it is almost unnecessary to say that the distinction, *pathologically*, between a caseous pneumonia and tubercle seems purely artificial, both being a growth of adenoid material with infiltration of the lung-tissue. In what site it commences, or whether in the earlier stages the epithelial element is more predominant than the adenoid, matters but little, if the results are the same; and I still think that the old view of what is now called caseous pneumonia, that it was a very acute tuberculosis, was anatomically correct, though perhaps clinically it may be of importance to distinguish between the two. While, therefore, the statement of Niemeyer,[1] that "the greatest danger to most phthisical patients is the development of tubercles," is certainly true, I maintain that this seeming paradox is quite as true, that *the great danger in tuberculosis is due to the formation of tubercles.* And why? Because these nodular growths have but little chance of keeping up the nutrition of their central parts, and the probability of softening down is greater than in those cases where each cell is brought into more intimate connexion with the surrounding structures.

On this point Niemeyer even does not seem to have recognised to its full extent the position he has taken up, for, after arguing in favour of "some causal connexion between the tubercles themselves and those nutritive changes in the lungs preceding their development,"[2] he proceeds further on (page 30)—"Indeed, if the doctrine that every case of phthisis consists in tuberculosis were correct, we should be obliged to admit that hæmoptysis could not very well lead to pulmonary consumption, as the exuded blood is certainly not transformed into tubercles." But, on his own showing, hæmoptysis may cause a chronic pneumonia and tubercles develop upon it. It may still then be *possible* "that every case of phthisis consists in tuberculosis."

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[1] Clinical Lectures on Pulmonary Consumption. By F. Von Niemeyer. New Syd. Soc., p. 11.

[2] Op. cit., p. 13.

The close relation which inflammation and tuberculosis bear to each other is further indicated by pyæmia, which is apparently a disease consisting of an exceedingly rapid tissue-proliferation induced by the action of pus. This process may be set up by a simple surface irritation—by a gonorrhœal discharge for example—just as a pneumonia or tuberculosis may from irritation of the lung, or by an old scrofulous deposit, of which the following case is a striking instance:—

CASE 12.—*Caseous abscess in the testis—Pyæmia.*—John S., æt. 26, was admitted into Guy's, under Dr Wilks, in May 1869. He came from Brighton, and had nobody with him. He seemed very drowsy, and all that could be elicited from him as to his history, was that he had had a fit. He had some severe epileptiform attacks while in the surgery. On 15th May he had seven fits, and he died on the 16th, rather suddenly, with a very high temperature.

Autopsy.—Face and neck marked with chronic eczema. The lungs had many patches of early lobular pneumonia. The right vesicula seminalis was in a state of caseous degeneration. The left contained recent greenish pus. The spermatic ducts came through the prostate still containing pus. The left testis was adherent, and on removing it some scrofulous-looking abscesses were cut into. The epididymis was in a condition intermediate between suppuration and softening yellow tubercle. The tubes of the epididymis were large and their walls caseous.

Over the first intercostal space was an abscess in the pectoral muscle; it had no well-defined walls.

Having now briefly reviewed some of the points in the process of inflammation, let us revert for one moment to the question, Why it is that prolonged suppurations do not so very commonly end in tuberculosis? I pointed out earlier in the paper that lymph (or at any rate exudation) corpuscles, which are closely allied to them, seem to form at the expense of the normal fat-cell. Whether they do so or not, however, is not of much consequence here, if we admit, as I think we must, that the pus-cell, or any degenerate cell, is only a lymphoid body highly charged with fat. Tubercle also is allied to the normal lymph-cell or a degenerate one, according as its development is good or bad. Practically, it is often much the same as a pus-cell, *quoad* its fat, from its earliest formation. Both pus and tubercle therefore feed upon the same material, if they both require adipose tissue for their production; and it is likely enough that if a large suppurating surface is present, draining away the fat, tubercle would have a difficulty in procuring material for its growth. On this point my own impression is, though I cannot at this moment lay my hands on facts to support it, that the spare, the lanky, and ill-formed, as a rule, have a more chronic form of phthisis than do those who are strong and well nourished; and further, when once the latter get accustomed, so to speak, to the emaciation produced by the disease, they may linger on for indefinite periods. All this, however, is in direct opposition to the clinical history of such patients, which teaches us that they do better on cod-liver oil and on a fat diet than on any other plan of treatment. I am, however, by no means sure that fats are suitable to *all stages* of the disease indiscriminately. It is possible that even harm may be done in the early stages of tuberculosis by their administration, while later on, when emaciation has proceeded to any extent, by their beneficial action on the general health they might react in a manner favourable to the patient upon the growth of the disease.

As to the connexion of scrofula with the maladies of which we have been speaking, it was formerly held, and is still, I believe, by many distinguished pathologists, that the scrofulous and tubercular are distinct diatheses. The facts and experiments enumerated here afford but little support to such a distinction. On the contrary, the scrofulous temperament is pre-eminently a caseous or suppurative one, and it has been my endeavour to show that caseation and tuberculosis go hand in hand. As to Virchow's definition, that tubercle arises from proliferation within the connective tissue, while scrofula is a glandular affection; allowing that the distinction is a real one, which it would not appear to be if the result of such proliferation may be gland-formation, it is yet true that one may give rise to the other, and if so, can they be distinct diatheses?

We have next to notice a few facts which would appear to indicate that malignant growths are possibly not very far removed from those affections of which we have been speaking—that they are apparently offshoots from the same stock, and in their progress subject to the same laws as have already been laid down.

First, then, what has been said of inflammation and tubercle, as regards their causation by external or local irritation, may with equal truth be applied to purposeless growth. Thus, continued stimulation will produce hypertrophy, then warts, and then, in some conditions, epithelioma.

It may be again enforced that *time* is an essential element in the process. If the excitement be but temporary, the cell progeny speedily returns to its former normal type; should it be continued longer, but still short of that moment at which malignancy begins, the tendency is still to revert, but the time that must elapse between the cessation of the irritation and the re-attainment of the former pattern is proportionately increased; while in epitheliomas, the tendency to work back again is not noticed at all. Such growths are then characteristic in their infiltrations, or in the power they possess of modifying the nutritional force of neighbouring cells. But this case of epithelioma may be said to be a special one. Taking therefore the more general one of scirrhus or encephaloma, we find that they are of more frequent occurrence in the glandular epithelial organs, such as the breast and testis, and that, if the tumour be obtained in its earliest growth, the disease may often be found to attack principally the epithelium of the tubules. I have noticed this particularly in scirrhus of the breast; when not occurring in epithelial organs they are found in glands which are ever in a condition of activity, and consequently in a state of change. An apparent exception to this rule is found in the frequency with which bones are attacked by medullary cancer, but it is not really an exception; for, according to Dr Sanderson,[1] within the last few years abundant adenoid material has been found in the medulla of bones.

2dly, It is probable that a truly cancerous growth may commence in the lymphatics around the vessels as with tubercular disease. At least, this result seemed to have occurred in a patient whom I had an opportunity of examining, who died of cancer of the liver, associated with tubercle in the peritoneum. The tubercle was not what is ordinarily understood by that term. They were millet-like grains, which, when examined microscopically, were found to consist of structureless collections of cells in all stages. The earliest condition was one of growth in the lymphatic channels, others had in addition the same kind of corpuscles clustered immediately outside the lymphatic wall, which varied in number up to regular cancerous tubercles. In connexion with this case may be mentioned another of soft cancer of the lung in the Museum of the Sussex County Hospital, at Brighton, a note of which I have copied from the catalogue of specimens, by Dr Ormerod's kind permission:—

"D. 43.—Encephaloid disease of the lung, taken from a patient who died of malignant disease commencing in the lumbar glands, which subsequently became as large as hens' eggs. All the lymphatics were found infiltrated with cancerous matter. The spleen was scarcely at all enlarged. During life all the symptoms of leucocythæmia existed, white cells being detected in the blood in great abundance."

3dly, It is possible that malignant growths may be transplanted from one part of the body to another. An instance of this mode of production is recorded in the Transactions of the Pathological Society,[2] by Dr Moxon.

To strengthen further the position that cancerous growths are largely the result of local causes, may be mentioned the clinical fact that such growths are often attributed to blows received, and though such history may be vague and unsatisfactory, it ought not,

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[1] Recent Researches on Artificial Tuberculosis, in their relation to the Pathology of Phthisis. Edinburgh Medical Journal, Nov. 1869.

[2] Vol. xx. p. 28. 1868-69.

I think, to be entirely set aside. Again, the time of life at which scirrhus of the breast most frequently appears (40 to 50, according to Birkett;[1] 45 to 50, according to Morrant Baker[2]), and the fact that 77 per cent. of such cases are or have been married,—these seem to suggest that the gland, having now no safety-valve in secretion for its declining force, takes on an erratic action. It is also to be noted that of 91 cases oberved by Mr Paget, 56 were in robust or good health at the time of the first appearance of the tumour, 9 others were in good health, and only 16 sickly.[3] Mr Birkett, however, in his article just referred to, could arrive at no definite conclusion as to the state of health when the tumour was first noticed.

If, then, tubercle, inflammatory products, and cancer, may each and all be produced, either by a local irritation or erratic development on the part of the ordinary lymph-corpuscle, in what do they differ from one another—for this they certainly do widely, both pathologically and clinically? In answer to this question, it can only be said, that they differ in the life-history of their ultimate particles. Thus, malignant growths possessing a large surplus of force expend it entirely in reproductive processes, while inflammatory cells and tubercle have a disposition to distribute what they have in tissue-formation or an approach to it. The more rapid the act in each case, the less perfect will be the work done, and the more likelihood of the occurrence of a degenerative change or a caseous transformation. Other conditions will also come into play, such as the habit of the patient, the situation of the diseased part, the degree of irritation, the extent of surface upon which it is exercised, and the blood-supply to the part, whether copious or otherwise; these, again, will modify in each the result, and, in place of formed tissue or active growth, produce pus or give rise to a process of withering.

Nothing has been said of what are called innocent tumours, because, from the standpoint we have taken, such growths are much more nearly allied to the normal structures of the body than either pus, or tubercle, or cancer *as we see them.* It can only be said now, that, inasmuch as they are abnormal only by position, or the predominance of one particular tissue over another, they fall quite properly into the class of hypertrophies.

The question of multiple growths, or those in which two or more different tissues foreign to the part are found in any one organ, as enchondroma and encephaloid disease in the testicle, are not so easily dealt with, though the difficulties are such as may possibly be explained when considered in connexion with what has been put forward in this paper.

When inquiring into the nature of these morbid products, the question of *tendency* on the part of the patient has of necessity been often raised. It will not be out of place now to say that, while arguing on the side of an extrinsic factor *in all cases*, it is at the same time admitted that this would be as nothing without a soil in which it could germinate. What I wish to suggest is, that instead of using the term *diathesis* in a limited sense, as proper only to a few, it should be made universal in its application, and only variable in degree. This diathetic condition I suppose to be a proneness on the part of the whole organism, or of single cells, to degenerate by a too rapid rate of living. Believing this, I cannot think that there is any habit of body in which it would be *impossible* to produce a tuberculosis, any more than that there is one in which an inflammation could not be set on foot, while in both cases the production of disease would be infinitely easier of accomplishment in some people than in others.

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[1] Diseases of the Breast, in Holmes's System of Surgery.

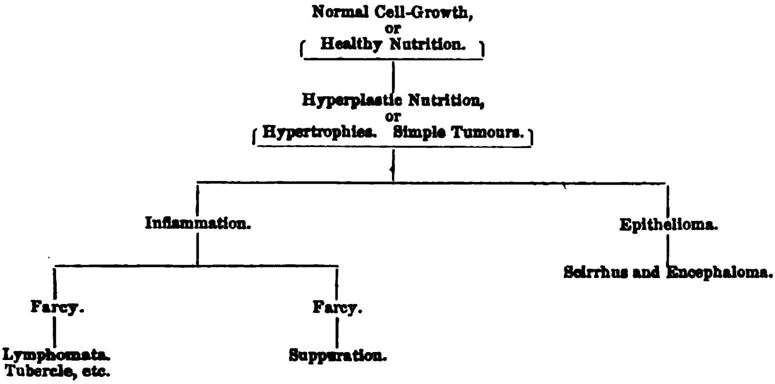
[2] Contributions to the Statistics of Cancer. Medico-Chirurg. Trans., vol. xlv.

[3] Op. cit., p. 638.

But, it will be said, if you acknowledge a certain tendency, and allow that it exists in some persons more than in others, you admit an unknown quantity into your calculation, and leave us very much in the position in which we were before. Is this so? Must we not, if we acknowledge the necessity of a combination of conditions for the causation of disease, allow also that, by modifying or removing one factor, we render inoperative the action of the other? and, if so, is not a hitherto very hopeless class of cases brought more nearly into the region of the preventible?

Whether we shall ever be sensible enough as individuals to believe this, and by acting on our belief endeavour to keep dust and smoke and all other abominations from giving us tuberculosis, remains still to be proved.

In conclusion, I have thought it advisable to draw out a table which will perhaps aid in explaining more clearly than is done in the text the gist of the whole essay. This is merely as a matter of convenience. By so doing, I do not mean to imply that any scheme, however wide in its extension, is so comprehensive as to embrace all cases occurring in actual practice. On the contrary, while attempting to classify, one of the chief objects of my paper has been also to urge, that we cannot always isolate the diseases of which it has treated, and say *this* is certainly tubercle and *that* pneumonia. There will come intervening tracts whose ownership is doubtful; and it is by these intermediate links we learn a true pathology. Possibly, some whose opinion I much value may think any attempt at classification a step in a backward direction;—let me then remind such that one of the best of our living authors has said, "When it once comes to thinking, good-bye to anything like strict agreement amongst men." Until then, all doubtful points have been reduced to matter of fact; and scope is no more left for inquiry, so long is every one who honestly thinks his conclusions based upon sufficient premises entitled to his own opinion.



It now only remains for me to thank the members of the staff at Guy's Hospital, and Drs Ormerod and Rutter of Brighton, for having so kindly placed their cases at my disposal. Without these the paper would have been valueless.

ARTICLE III.—*Suggestions as to the Use of Calabar Bean in Cholera Asiatica.* By W. MUNRO, M.D., C.M., District Medical Officer, St Kitts, W. I.

FROM the near approach of cholera to England, any reasonable suggestions for its cure will not, I hope, be considered out of place. For some time past I have thought that Calabar bean would probably be useful in cholera; but living in an island that has not for the last seventeen years been, and I hope will not for a still longer time be, visited by the disease, I have not had, and am not likely to have, an opportunity of giving it a trial. I have therefore adopted the somewhat unusual course of putting forward a drug for a new use on its *a priori* merits, hoping that any medical man who, like myself, from a consideration of these, is induced to believe that it is likely to prove useful, and who has the advantage of being able to make a trial of it, will communicate his success or non-success for the benefit of the profession. The fact that on *a priori* reasoning it is likely to do good, must be my apology for trying to add to the number of medicines which have already been vaunted as specifics in this disease, and failed on trial. Whether the cholera poison kills by acting directly on the blood, or on the vaso-motor centres of the spinal cord through the blood, causing contraction of the small arteries and capillaries of the skin and congestion of the internal organs, there can be but little doubt, I think, unless in the minds of those whose great specific is castor-oil, that whatever counteracts the effects produced by the poison will be useful; and this, I think, considering its physiological action, Calabar bean is likely to do. In Cholera Asiatica the temperature of the surface of the body is diminished, while that of the rectum, and probably of the viscera, is elevated,[1] the capillaries in the first case being contracted, in the other dilated, probably from some irritation of the vaso-motor centres of the spinal cord. The action of Calabar bean is to cause dilatation of the smaller arteries and capillaries, and this Dr Fraser "is led to believe is mainly due to a specific effect on the ganglia and nerves which govern the calibre change in the vascular system;"[2] and "it causes paralysis of the spinal cord by a special and primary action."[3] At first, no doubt, there is for a short time contraction of the vessels, but this is probably caused by the restriction in the heart's action.

"The Calabar bean, acting on the bodies of mammalia in a state of health, *expands the capillaries and slightly elevates the temperature of both skin and rectum*;"[4] and it might be advanced that the benefit conferred by its causing dilatation of the peripheral vessels in cholera would be counterbalanced by its effects on those of the intestine. As, however, the dilatation of the vessels in the intestinal mucous membrane seems to be rather the effect of the contraction of those of the skin than a primary effect of the poison, it is highly probable that if the bean restored the former to their natural calibre, as it probably would, the latter remaining to a certain extent in a state of dilatation, if they did so, would be of no consequence, as they would no longer be in a state of congestion, and would be better able to retain the serum of the blood, the loss of which is so serious.

Physostigma increases the secretions,[5] probably as an effect of the dilatation of the vessels. If the ideas given above are correct, however, it would not have this effect on the abdominal secretions in cholera.

"It seems in the first place to increase the vermicular contractions of all the abdominal viscera, and then diminish them."[6] This action would probably tend to lessen the purging and vomiting.

That it can act as a counter-poison to poisons having so far an action analogous to cholera, is shown by its causing dilatation of the minute bloodvessels when they have been contracted by atropia.[7] Dr Fraser has found that it is an antidote to strychnine,[8] and it has been used with success in tetanus.[9] It would therefore, it is more than probable, even were it useful in no other way, relieve, perhaps even remove, the frightful cramps of cholera, the pain of which, by its depressing influence on the system, assists so materially in destroying the patient.

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[1] See Niemeyer's Text-Book of Practical Medicine, translation by Humphrey and Hackley, vol. ii. pp. 640, 641.

[2] *Vide* Fraser in Transactions of the Royal Society, vol. xxiv. p. 53.

[3] Ibid., p. 20; and see also Fraser in Edinburgh Medical Journal for June and December 1867.

[4] Ibid., p. 54. [5] Ibid., p. 73. [6] Ibid., p. 57. [7] Ibid., p. 67.

[8] Page 26, Exp. xliii.

[9] See, for instance, Dr Macarthur, in Edinburgh Medical Journal, May 1867.

As to *when* the bean ought to be used: This, I think, could be best judged of by the medical man, according to circumstances; but, as far as I think at present, I would be inclined to use it whenever I found that the premonitory diarrhœa was not stopped by ordinary remedies, and that the external temperature was lower than normal by the thermometer.

As to *how* to use it: I would give it by subcutaneous injection. In Dr Macarthur's case mentioned above, it was so given, and no bad results followed; but even were some local inflammation to be set up, if the patient recovered through its use, that would not much matter. I would inject in the dorsal region of the back, beginning with $\frac{1}{8}$ gr. of the extract, repeated every two hours, and increase the dose if required. It is well said by Dr John Murray,[1] "In collapse, experience shows that opium astringents and alcohol lie inert on the collapsed stomach," and I have no doubt extract of Calabar bean would do the same.

I need perhaps hardly say, that I would by no means trust to Calabar bean alone, but would use such rational means (as, injections of salt and water, sinapisms, and heat applied externally) as have been found of benefit.

In conclusion, I would beg it to be understood, that what I have said is simply to be taken as suggestions for the use of a drug which, I think, is *likely* to prove useful in cholera, not as proof that it necessarily must be so; indeed, if at all recklessly used, it might be very mischievous, from its great depressing influence on the heart's action; and I would earnestly advise those of my readers who are in a position to do so, to read over Dr Fraser's papers referred to above, before using it.

ARTICLE IV.—*On Feigned Diseases, their Detection and Management.* By GEORGE WILSON, M.A., M.B., C.M.; Medical Officer H.M. Convict Prison, Portsmouth; late Medical Officer H.M. Female Prison, Woking; and Assistant-Surgeon H.M. Invalid Prison, Woking.

IN the experience of most general practitioners, malingering, or the feigning of disease, is happily of such rare occurrence that but very little attention is devoted to a study of the subject. Cases, however, crop up now and then even in the most select of practices, and many, I have no doubt, on account of their comparative infrequency, remain undetected. The medical attendant, unsuspicious of any motive to deceive, is naturally puzzled with the anomalous symptoms presented by such a case; he tries all sorts of remedies, becomes eventually chagrined because the cure is protracted, and attributes to the failure of his art the unsuccessful issue of a disease which in this instance did not exist. One is so loath to believe that the sick-bed should be made the arena of deception, that rather than yield to suspicions even though they be well founded, we sometimes fall back upon the complexity of disease, the uncertainty of diagnosis, and end by giving the scheming patient a good deal more than the benefit of the doubt. Hence it is that club patients occasionally make capital out of their clubs, that paupers mulct the parish unduly in the way of relief and extras, and that persons, after receiving handsome damages for a railway accident, often recover with a rapidity which is truly astonishing. Every medical man therefore is, to a certain extent, the custodian of public justice and morality, and in so far as he fails to detect such fraudulent attempts which come under his notice, so far does he fail in discharging efficiently the trust reposed in him.

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[1] In the British Medical Journal, 12th August 1871, p. 177.

Perhaps amongst no class of individuals, not even amongst soldiers, is malingering practised with such skill and persistency as amongst convicts; and this is not to be wondered at when we consider the low *morale* of the class generally. "Be civil and take it easy," is the motto of the habitual criminal during his imprisonment, which means simply that a man has a perfect right to his opinions, provided always he keeps them to himself, and that his duty is to do as little as he possibly can in the way of work without running the risk of being reported, or, if the work becomes too severe, to "shirk" it by any expedient which he can adopt. Formerly, when pardons were granted on medical grounds, the temptation to malinger was considerably greater than it is now, though even now the arduous work and scanty diet of a hard-labour prison render the convict's life distasteful enough. If, therefore, he is put to work which he does not like, he considers it quite fair to sham any illness in order to be recommended to lighter work, to gain admission into hospital, or if possible to become invalided and sent to an invalid prison. Sometimes, again, he feigns insanity, that he may have a chance of being removed to a criminal lunatic asylum, or be enrolled amongst the imbecile prisoners.

Naturally, the code of criminal ethics is so very liberal and elastic, that scheming and duplicity are not only deemed quite legitimate, but the convict who excels in such qualities deserves well of his fellows, provided always he treats them honourably, or, in other words, does not play the part of spy or informer. Hence it seldom happens that the surgeon receives any information relating to a case of malingering from other prisoners; and if he does, the chances are that any such statement would turn out to be a falsehood. Under these circumstances, he has to depend on his own acumen, with whatever aid he can obtain from infirmary warders in the way of observation.

It may be inferred from these remarks that very little reliance can be placed on what are called the subjective symptoms in cases of doubtful illness amongst convicts. Indeed, so much is this the case, that the prison-surgeon, after no lengthened experience, becomes very sceptical concerning such symptoms unless they are confirmed by objective signs of disease. I confess it is not a pleasant feeling to be constantly influenced by this sceptical turn of mind, for it is apt, unless carefully kept in check, to lead one into mistakes; nevertheless, it is the most effectual safeguard against being imposed upon, and I cannot help thinking that a little of it would tend to lessen the number of glaring discrepancies which are too often observable in the medical evidence given before a civil court in cases of railway accidents. Although I have personally had no experience of such accidents, I feel quite sure that if subjective symptoms were as closely scrutinized as they are in prison, the damages which railway companies are made to pay would be materially lessened. No doubt, a hysterical woman, or a hypochondriacal, nervous man, would be very liable to suffer after a railway accident from symptoms characteristic of what has been called "railway spine," even if no actual injury beyond a good shaking has been received; yet though these symptoms are only imaginary, they are very distressing to the patient, and do not in the least impugn his good faith. Hence, in all cases of railway or other accidents claiming damages, it would greatly assist in forming a correct diagnosis to adopt the system which one is induced to pursue in prison—namely, to inquire minutely into the previous history and character of the patient, and to discover, if possible, the existence of any motives for deceiving. It would be well also if the parties sued for damages had the power of refusing compensation to doubtful cases, unless they submitted to be put under observation in an hospital or elsewhere.

Without attempting to follow any formal classification of feigned diseases, I shall now proceed to point out in detail some of the more common phases of malingering, illustrating by cases derived from prison experience and other sources. And first with regard to feigned injuries and diseases of the spinal cord. Cases of this description are of great importance medico-legally, because they are of such frequent occurrence after railway accidents. The form of disease, or rather symptom of disease, most usually simulated is paraplegia, and though the mode of detection and management must necessarily vary according to circumstances, it may be of some interest if I describe briefly a typical case of the kind occurring in prison practice, and how it is dealt with:—If, for example, a prisoner receives a fall on the works, and has to be carried into the hospital on a stretcher, complaining of great pain in the back and inability to move his legs, but with no loss of sensation and without any signs of local injury, his statements are carefully noted, though left open to question. It is possible he may have received a spinal injury, and as it is always best to err on the safe side, the patient is put under observation, and treated as if the case were genuine. Meantime inquiry is made into the criminal history of the patient, which is fully detailed in his caption-paper, as to his conduct, as to whether he has been previously convicted; whether he has been frequently reported for idleness, or whether he has ever been charged with malingering on any former occasion. The evidence of the officer in charge of his party is also obtained, who furnishes the particulars of the accident. Next morning the night-officer reports as to how the patient slept, and whether or not he observed any movement of the legs. If now it be found that the urine and fæces are passed without any difficulty, that the pulse is normal, that the temperature of the legs is not lowered, and sensation is still intact; if it be found, also, that the fall was not of such a height as would be likely to produce serious injury to the spine, and that the prisoner is just the sort of person to make the most of such an accident,—the case looks very much like one of malingering. As a confirmatory diagnostic test, a pin or the point of a lancet may suddenly be thrust into the leg, when the limb in all probability will be flexed with an amount of violence and to an extent which cannot wholly be explained on the theory of reflex action. A dose of the galvanic, or of an electro-magnetic, battery will complete the cure, and the prisoner is discharged and reported.

Simple though the diagnosis of such a typical case may appear to be, it is necessary to take all these precautions, and to guard against hasty conclusions, because a mistake at the outset may readily be made; and to my mind there is nothing so painful, on after reflection, as to discover that one has unjustly suspected a poor fellow who has really been injured. The following is an instance of such a mistake. One morning I was called hurriedly to see a prisoner who had fallen from a scaffolding. The scaffolding was only between six and seven feet from the ground, and the prisoner had fallen backwards on his shoulders. He was complaining lustily of pain in his back; but as the extent of the fall appeared so trivial, and as my faith in prisoners' statements was considerably shaken by that time, I concluded that he was making the most of it, and rather harshly told him so. He was carried to the hospital, and placed in a separate cell for observation. On examination, no external sign of injury could be detected, but the patient complained of great pain in the lower dorsal region, of numbness, and a pricking sensation in the legs, and of being unable to move. In the evening he had retention of urine, and the catheter had to be used. The ultimate history of the case was one of ordinary paraplegia from injury to the spinal cord. Complete loss of sensation set in; in a few days the urine became ammoniacal, and the retention was gradually replaced by incontinence. At first enemata had to be used, but afterwards the fæces passed involuntarily; the temperature of the legs became lowered; there was gradual wasting, succeeded by extensive sloughing, and the patient died twelve weeks after the injury was received. Post-mortem examination showed that the portion of the cord corresponding to the ninth, tenth, and eleventh dorsal vertebræ was disorganized and converted into pus, and that the body of the tenth vertebra appeared to project slightly backwards. No doubt, there had been effusion of blood into or round the cord, in consequence of slight dislocation and fracture.

Even in severe spinal injuries it is quite possible that there may exist complete loss of power without appreciable loss of sensation, according as the afferent or efferent tract is affected. Only a short time ago I saw a case of this kind, not connected with the prison. A workman had fallen backwards from off a timber cart, alighting, as it was stated, on the back of his head. He was insensible for about ten minutes, and when conveyed to the surgery where I saw him, it was found that he had a slight contused wound on the occiput; but he was unable to move his legs or arms, and could only grasp one's hand with the feeblest pressure. He could move his head from side to side, and had no loss of sensation. The breathing was not noticeably diaphragmatic, nor could there be discovered any external signs of fracture or dislocation of any of the cervical or upper dorsal vertebræ. Had he been a convict, I believe I would have regarded the case with some suspicion; as it was, the surgeon who attended him very properly had him removed to hospital. I have since learned that he died in a week afterwards, the paraplegia remaining, but without any marked loss of sensation. No post-mortem examination was made.

I mention these cases to show how inadvisable it is to form a rash opinion, even in cases which, at first sight, may not appear very serious. Of course, a few hours' observation, or a second examination, would settle the diagnosis in the great majority of severe spinal injuries; but every fresh case has peculiarities of its own, and if these peculiarities present themselves to us in the light of anomalies, we are apt to become puzzled, and, perhaps, over-suspicious. It has also to be borne in mind, that delineations of symptoms in text-books, however full and accurate, cannot include the varied features of every case.

But in most instances of feigned injury to the spinal cord, the paraplegia, which is generally the only prominent symptom, is a sort of after-thought; it sets in gradually, and, as a rule, is limited to the legs. A person, for example, has sustained a fall or received an injury of some kind, and, on examination, abrasions or contusions may be found in the dorsal or lumbar region. The patient complains of great pain in the back and of stiffness. He may also have numbness and "tingling" in the legs, arising from concussion. He is put to bed and nursed carefully. His appetite is good; there are no febrile symptoms, and no retention of urine. By-and-by the bruises disappear, and when it is thought the patient may get up, he says his legs are nearly paralyzed, and he cannot stand on them though he can move them in bed. Here, then, is a case in which there was undoubted injury to the back and perhaps concussion to the cord, but nothing further; and it takes no small amount of tact and discrimination sometimes to decide positively its real merits. If the patient is a resolute fellow, he will stand any amount of blistering along the spine—will even submit to an application of the actual cautery without giving in; and should he maintain that he has loss of sensation, will not wince at the thrust of a pin or lancet.

As an example of cases of this description, I quote the following from a paper published by Dr Hall, of Sheffield, in *The British Medical Journal,* 21st March 1868, on Railway Accidents:—

"Mr ——, a gentleman in middle life, had the misfortune to be riding in a second-class carriage at the time of a collision on a railway. After the accident he proceeded some distance; and, at the end of his journey, he was seen by the surgeon of the company. He complained of pain over the dorsal and lumbar regions, on which, he said, he had been bruised; and, in addition, of an inability to walk without pain. He returned to his home from London in a first-class carriage, was immediately attended by his family surgeon, and was seen by myself, for the first time, seven days after the accident.

"I found him in bed, laid on his back. He told me 'he was suffering very great pain along the whole course of the spine, and that he had not power to move his legs, or even to turn in bed.' The temperature of the whole body was normal. He had perfect command over the bladder and rectum; he said that at first he had 'difficulty with his water, but that was improved.' His pulse was 76; but as he spoke of the severe injuries he had sustained by the negligence of the company, and the heavy damages (two or three thousand pounds) that he would make the directors pay, he became very excited, and his pulse to rose 98. On getting him out of bed, he was unable, he said, to walk, or to bear any of the weight of the body on his feet; he supported himself by the table, and insisted on being again carried immediately to his bed. There was no mark on any part of the back. During the whole of my attendance these symptoms remained. He complained of a sensation of pins and needles in both legs; there was no reflex action; no drawing up or starting of the legs; no wasting. As we saw him in bed, he appeared a stout healthy man, but told us again and again, 'that he had no power over his limbs, and that he was unable to walk.' In the absence of all objective symptoms, I ventured to express a very strong opinion that no permanent injury to the spine or spinal cord had been sustained; and in this opinion three other medical gentlemen concurred. Having satisfied myself that not only could he walk without assistance, but that he had actually done so, and that, too, at the time when he assured me that he was altogether incapable of moving his limbs, I discontinued my attendance.

"A gentleman of great skill and long experience was now called and, through trusting to subjective symptoms only, he was led to conclude that the injury to the spine and spinal cord was severe, and probably permanent.

"About three months after the accident, the case was compromised, by a payment by the company of several hundred pounds. It is, doubtless, a consolation to this gentleman and his friends now to know that my prognosis was correct, and that his and their fears proved altogether groundless. Shortly after the case was settled, he was observed walking about in the street. He has almost ever since attended to his business; and no trace of the injury remains."

Occasionally, paralysis is feigned by convicts who have been admitted into hospital, and are being treated for some other ailment. As an instance in point, I give the following case:—Prisoner G. D. was admitted into hospital 25th February for debility. He had lost a good deal of flesh, having been employed at hard labour, and said he felt dizzy when at exercise. His appetite was good, and he was put on liberal diet and tonics. Although he continued to improve in appearance and to gain weight, he himself would never admit that he was any better. On 22d March, the night-officer reported that he had a fit of some kind. Next day there was nothing unusual in his appearance. His appetite had all along been good, and he could give no satisfactory explanation of how the fit came on. He was told that he was making rather too much of it; he took the hint, and has had no more fits since. But a few days afterwards he complained of soreness in the legs, and said he could not walk properly. When asked to walk, he went tripping along, taking short rapid steps, and without allowing the heels to touch the floor. Although I could not think so, it was quite possible that this might be some strange and insidious form of locomotor ataxy, and I therefore examined into all the features of the case as carefully as I could. I found the temperature of his legs normal; sensation normal; no wasting or flabby state of the muscles; no ocular disturbances; the urine normal. He could stand with his eyes bandaged; and, when asked to walk, tripped along as he had done before, keeping his arms extended to prevent his falling or knocking against anything. He could even shuffle backwards. The officer also told me that he could carry his urinal to the water-closet with both hands, and that, at these times, he walked much better than when exhibiting during the visit. Being satisfied as to the nature of the case, he has been treated to a daily application of an electro-magnetic battery, to which he submits apparently with the greatest resignation. Finding that this did not succeed, I applied Corrigan's cautery along the spine, so as to produce a series of small blisters, and these have been kept open by ung. sabinæ dressing. In spite of all this, he daily maintains that he is "much the same—no better and no worse." He looks well, takes his food well, and sleeps well. I have told him my opinion of his case, and have ordered an ordinary galvanic battery, which, in my experience, is far more suitable for such cases, because more powerful, than the electro-magnetic. I expect that a few doses from the new instrument will produce a rapid cure. If it be asked, how is it possible that a prisoner would submit to all this if there were not something the matter with him? the answer is that, in this case, the prisoner detests work, and is an old malingerer; in the second place, he would like to be invalided; and, thirdly, he is afraid of being reported and flogged when he is discharged from hospital. All these are sufficiently powerful motives, without taking into consideration that spirit of dogged determination common to almost all cases of malingering amongst convicts, which prompts the schemer to persist to the utmost verge of endurance, for the simple reason that, in being obliged to give in, he loses caste amongst his fellows, and is liable to be reminded of his failure oftener than he likes.

But when a prisoner, by feigning paralysis, has succeeded so far as to escape detection, and is at last removed to an invalid prison, the case presents itself in a new aspect. In the first place, the prisoner has been invalided because his disease was believed to be genuine; but beyond the mere statement of the cause of invaliding, no detailed history of the case is forwarded. The surgeon has, therefore, to trust to the patient's own account of the commencement and progress of the disease, and to the conclusions which he himself may arrive at after a physical examination. If he has doubts concerning the exact nature of the case, he is averse to communicating frankly with the surgeon who has invalided the prisoner, because he could not expect the latter to entertain his opinion at any rate until he has proved it to be correct; and, indeed, we all know that the evidence must be clear and conclusive before any one would admit that he has been caught tripping in this way. Fortunately, however, a great assistance to diagnosis may be obtained from a well directed cross-examination of the patient, especially if the questions be put in a sympathizing tone. He has gained the end for which he has intrigued so long and perseveringly, and consequently he is more or less off his guard; but if from look or remark he gets the least inkling that he is suspected, he forthwith retires into his shell of reticent caution, and no amount of coaxing will get him out of it again. If he can be got out at all, it will only be by having recourse to forcible ejection, and sometimes that is no easy matter. The cross-examination must, therefore, be conducted in the kindliest manner, and so as to give the patient the impression that his credibility is unquestioned. By a process of what may be called inferential interrogation, he will very probably be induced to give a very incongruous and contradictory account of his case, and will usually admit that, thanks to the "skill and kindness of the doctor" who invalided him, "his life has been saved, and he has even improved a good deal lately, but he never expects to get well again." Indeed, his expressions of gratitude to all and sundry would be as gratifying as his quiet resignation, were it not that the one is as hollow as the others are false. It will also be found that distasteful remedies such as blistering or galvanism, if they have been tried at all, did him no good; in fact, they made him worse. Any improvement in his health that has taken place has been entirely owing to the generous diet which the doctor was good enough to give him, and to the medicines which he so skilfully prescribed for him; thereby giving you to understand that if you adopt a different course of treatment your professional reputation is at stake. And so the interview ends. If the case is clear, he may either be assured that you have no doubt he will soon get well again, because you have seen other patients get cured whose condition was much more hopeless than his; or he may be flatly told that he is a malingerer, and the sooner he gives it up the better. If the latter course be adopted, there must not be the slightest room for doubt in the case; and one must also be fully satisfied, from judging the character of the patient, that he will yield readily to prompt and legitimate measures. As a matter of expediency, therefore, it is advisable, in the majority of cases, to humour the patient a little, and to assist him in getting well, deferring the opinion entertained of his ailment until some considerable advance towards cure has been attained. He may even be allowed the aid of crutches for a few days, and the luxury of an easy-chair; but if the indulgence is protracted, one cannot be surprised if he takes such a liking to these articles that he will not readily give them up.

When assistant-surgeon to the Woking Invalid Prison, I saw a good many cases of this description; but with the exception of individual idiosyncrasies of character, they were all very much alike in presenting little or no physical changes indicative of disease beyond the paralytic symptoms. And here, lest I might be charged with reflecting on the professional acumen of my brethren connected with the convict service, I would honestly state that it brings no discredit on them to have been deceived by such cases; nor does it imply a greater power of discrimination on the part of any one, under whose care they came, to have detected them. Medical diagnosis has not yet reached that point of perfection when it can be said that he who makes a mistake is not *well up* in his profession; and I fully believe that our most accomplished physicians would be liable to be duped occasionally if they had convicts for their patients. I have already said that malingerers, when they are invalided, are less on their guard, and are even desirous to be freed from some of the irksomeness attending the sick-bed, that they may enjoy as much of the amenities of the hospital as possible, while taking great care not to lose them altogether. For this reason they are much more open to detection, in the same way that children afford far better opportunities to judge of their characters when on a visit to a friend's house than when at home, especially if they are naughty children. This illustration may appear to be unscientific, but it is none the less pposite.

Sometimes, however, prisoners do not throw off the mask so readily even after they have succeeded in being invalided; and when this is the case it is found that they have in prospect either a remission of part of their sentence or final liberation on medical grounds. Dr Campbell, Medical Officer to the Woking Invalid Prison, who has had extensive experience in the detection of invalided malingerers, gives the following instances of this species of feigning in his annual report for the year 1869. He writes:—"Feigned paralysis of the lower half of the body has often come under my notice, but two remarkable cases occurred this year. The first met with an injury in September 1866 in prison, which was said to have been followed by complete paralysis of the lower half of the body, and continued up to the time of reception in June last. He then appeared perfectly helpless, pretended he could not turn in bed without assistance, and that he could not retain his urine. His behaviour was at the same time very insolent and discontented, constantly reflecting on those he had previously been under, and threatening us here when anything was attempted for his benefit. He was placed under close observation, and the usual remedies for the disease employed in a firm but gentle manner. On the sixth day after reception he got out of bed, and on the tenth, when we went to the ward at the usual hour to galvanize him, we were rather astonished to be told that he had gone down to the exercising yard with the other patients. This quick recovery from paralysis of about three years' duration is sufficient to show that whatever may have been the immediate effect of the accident, he must at all events have been feigning for some considerable time. Failing in this, he tried to feign epileptic fits, asked to be removed to a cell, and allowed a bed on the floor, which was refused; and on being closely watched, he soon desisted.

"Another, received in apparently the same helpless condition, deceived us for a considerable time; but by steadily persevering with the treatment, he suddenly regained the use of his limbs, and walked to the bed he had so long occupied in a seemingly helpless state."

A case of the same kind was received at this prison last year for transmission to an invalid prison. His paralysis, he said, was the result of an accident, but he had lately got so much better that he could sit out of bed and move about a little with the aid of crutches. When spoken to, he affected a sort of paralysis agitans of the head, otherwise his appearance was very healthy, the legs well nourished, and the sensation and temperature normal. There was no incontinence, nor was the urine unhealthy. He resisted the galvanic treatment for a time, but at last we came to a mutual understanding; he was reported to the Visiting Director, and has since been employed on the public works.

When such cases as these occur amongst female prisoners the diagnosis becomes much more difficult, because they are liable to be confounded with hysterical manifestations or with functional para- s. The following is a case in which this difficulty arose. A prisoner, about 40 years of age, was received into the Woking female prison with paralysis of one leg. On examination, I could not detect any difference between the two limbs, but the patient said she had no feeling in the one that was paralyzed. In spite of this, however, I concluded that it was a case of shamming, and suddenly thrust the point of a lancet into the leg, expecting of course that the limb would be suddenly flexed. But I was deceived; there was no movement of the limb, and the patient only gave me a reproachful look when she saw a little blood trickling from the puncture. From this I changed my diagnosis, and put it down in my own mind as a case of so-called functional paralysis; and believing that galvanism would really prove beneficial, I used the battery daily with apparently very marked benefit. In a short time the patient could move about without a crutch, and one day during the visit she fell down on her knees in the ward, and showered down her blessings on me, just as only an Irishwoman can, for having saved her from being a life-long cripple. All this, though somewhat stagey, was nevertheless gratifying, for the woman had been a cripple for a long time previous to reception; and though she still dragged the foot when she walked, I was in hopes that in a short time she would be completely cured. In a day or two afterwards, however, she misconducted herself in the ward, and had to be reported; after which she became so noisy and violent that she was removed to a separate cell, and it was considered necessary to put her in a strait-jacket. I was very much astonished when informed next day that she had struggled out of the jacket, pitched it out of the cell-window, which she had smashed, and finished by dancing Irish jigs with a vigour that soon put her out of breath. When I asked her to account for her conduct, she told me that the "Blessed Virgin" had appeared to her in a vision and cured her. At any rate I received no more of her blessings, but something the reverse, when I explained to her my opinion of her case. She several times afterwards refused to get out of bed, maintaining that her leg was again paralyzed; but, whether rightly or wrongly, I as invariably reported her for malingering. In fact, she was an incorrigible, though I have sometimes thought since that possibly it was not all feigning on her part.

Paralysis of a limb, unless it arises from actual injury to the nervous supply, is of such rare occurrence, that in the absence of any objective symptoms, any case of the kind ought naturally to arouse suspicion. I believe it has often been feigned in the army, but, with the exception of the above somewhat doubtful case, I have met with no other instance amongst prisoners.

In intimate relation with this part of the subject, there is a class of diseases primarily or ultimately affecting the spinal cord, which, in military or prison practice, are liable to be regarded at the outset as feigned;—I refer to chronic diseases of the cord or its membranes, and to caries of the vertebræ and lumbar abscess. Acute spinal meningitis and acute myelitis are attended by symptoms so well pronounced that, whether their diagnosis be differentiated or not, no doubt could arise as to the existence of serious active disease. But when these affections are chronic, the train of symptoms sets in so insidiously and indistinctly that there is great difficulty in making a correct diagnosis even in cases which are beyond the range of suspicion of being influenced by any motives to deceive. The possibility of the occurrence of such cases has always to be borne in mind by the prison-surgeon, and, consequently, he has to be very cautious in deciding upon the merits of any case presenting symptoms, however ill defined, that could be attributed to the commencement of one or other of these diseases. With regard to caries of the vertebræ or to lumbar abscess, these remarks are doubly applicable, because while the incipient symptoms are as obscure, the diseases themselves are of far more frequent occurrence. I have myself seen two cases, one of caries of the cervical vertebræ, and another of caries of the lumbar vertebræ associated with lumbar abscess, which were at first regarded with a considerable amount of suspicion; and in military reports there is abundant evidence to show, that not only have such cases been sometimes regarded as fictitious, but have even been treated as such.

I think it may safely be laid down as a rule that in all cases of shock or possible injury to the spinal cord, a favourable prognosis may be given so long as the symptoms remain purely subjective, and, indeed, where there exist any motives for exaggeration or deception, the absence of all objective symptoms ought to arouse suspicion. Paraplegia resulting from accident, unless it be of a hysterical nature, is speedily followed by symptoms of a more or less grave character. If the seat of injury be situated above the fifth cervical vertebra, the whole of the limbs are paralyzed, and dyspnœa and difficulty of deglutition are intense. If the injury is below the second dorsal vertebra, the arms are not affected, but the intercostal muscles are paralyzed and the respiration becomes diaphragmatic, thereby rendering sneezing, coughing, or deep inspiratory and expiratory efforts impossible. But whether the seat of injury be in the cervical, dorsal, or lumbar regions, the healthy functions of the bladder are more or less interfered with, the urine becomes eventually ammoniacal, and the sphincter ani is relaxed. When the injury is severe, the temperature of the paralyzed parts becomes lowered, the muscles waste, the cuticle desquamates, and bed-sores are formed. Sensation may or may not be lost. These are the more important objective symptoms attending disease or injury of the spinal cord, and they cannot be lost sight of when we have to decide as to whether a suspicious case of the kind is feigned or not. The safest and most legitimate means of detection, as I have already indicated, is a free use of the galvanic or electro-magnetic battery, along with strict observation. I have twice tried chloroform, but the patients objected so strongly, and became so violent at the outset, that I did not like to run the risk of putting them sufficiently under the influence of the drug, there being a possibility, in their excited state, of some untoward accident arising.

(*To be continued.*)

ARTICLE V.—*Case of Deformity of the Pelvis, in which Cæsarean Section was performed; with Remarks.* By ANDREW INGLIS, M.D., F.R.C.S. Edin., Professor of Midwifery in the University of Aberdeen.

THE subject of the operation which I am about to detail was living at Kintore, about 14 miles from Aberdeen—a dwarf 3 feet 6 inches in height—who, having arrived at the full period of pregnancy, fell in labour, and, after having been waited on for forty-eight hours by a midwife, was seen by Drs Laing and Abel, who immediately acquainted me with the fact. On my arrival I found the pulse pretty good, but was told that it flagged considerably at times. The skin was in good condition and the tongue moist, while there was little abdominal tenderness. The vagina was cool and moist, with the usual viscid mucous secretion tinged with meconium; and the os was flaccid and dilatable. The breech was attempting to present, but the inlet of the pelvis was so small that only a portion of the nates could be felt, the œdematous scrotum of the child nearly filling the pelvis. The sacro-pubic diameter at the brim was easily reached, and seemed about 2 inches long, while all the other measurements of the pelvis were more or less diminished. As craniotomy with such a presentation would have required to be preceded by evisceration, and would therefore have been much more dangerous for the mother than cæsarean section, we determined to perform the latter operation.

Having ascertained that the placenta was on the right side of the uterus, the line of incision chosen was on the left of the mesial line. The patient having been put under chloroform—of which, however, not much was required during the operation—the knife was entered about 1½ or 2 inches to the side of the umbilicus, and carried down for about 5 or 6 inches, but farther progress in that direction seemed unadvisable, as the superficial veins were large and tortuous in the lower part of the abdomen. The incision, therefore, was extended upwards for about 2 inches. Two small veins at the lower angle of the incision bled, but were secured by torsion. A flannel dipped in hot water and wrung-out was laid over the incision and held till all oozing ceased, and then the uterine incision was made. The knife was entered at the fundus about 1½ inches to the left of the mesial line, and was carried first downwards and then to the side, the curve of the incision corresponding with the direction of the outer circle of fibres surrounding the left cornu.

Before the incision was begun the uterus seemed so thin and membranous that the outlines of the child could be felt, but, on the slightest touch of the knife, contraction came on, and the parietes became so thick that I feared at one time I was on the placenta. During the cutting of the uterus the bleeding was pretty profuse, two large vessels going across from the left side to the placenta having been divided, and the patient was almost in a state of syncope.

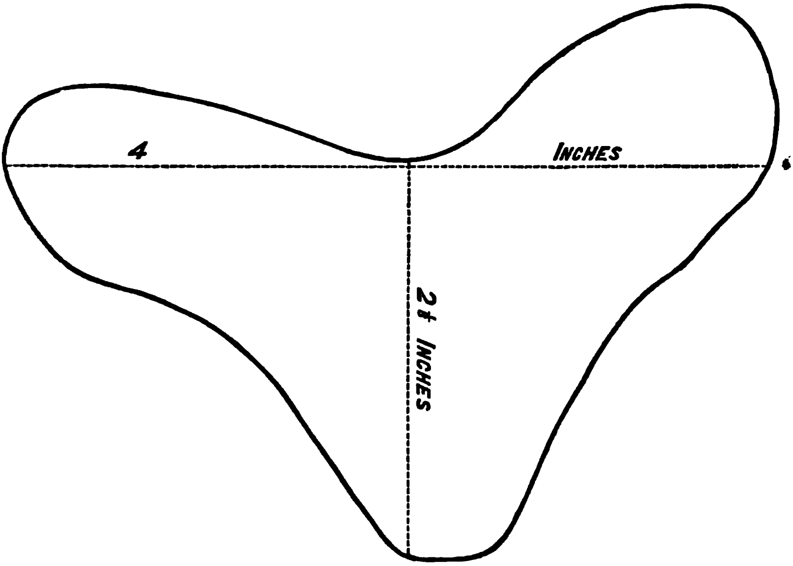
Having finished the uterine incision, it was enlarged slightly with the finger, and then the hand was introduced, the head and body of the child turned out, and the placenta peeled off and expelled; and, finally, two fingers were pushed down through the os, after which the uterus contracted strongly and expelled the hand. At this stage of the operation a portion of the colon protruded, but was easily returned. The flannel was applied again for a short while, the abdominal wound being kept open, but the air excluded; and, after that, when the uterus was well contracted and the bleeding had stopped, the parietes were sewed up and a pad and binder put on. After this the patient took nearly an hour to rally before we could venture to put her to bed, but when there she began to improve; vomiting had been severe before the operation and returned again a little, but an hour or two after delivery she brought up a large quantity of slimy mucus, which gave her great relief. There was also some bleeding per vaginam, which was stopped by a little ergot. She had a tolerably good night. Dr Laing saw her in the morning, found the pulse about 120, temperature good, tongue moist, and no vomiting; had passed urine freely by herself several times. The abdomen was not very tender to touch. Next day Dr Abel saw her, and gave a similar report. She had passed a good night—not much pain—but was bringing up now and then mouthfuls of bilious matter. This in part he attributed to her immoderate drinking of cold water.

The following morning the symptoms of shock increased, and on our arrival we found her dead.

The child was alive before the operation, and when extracted breathed once or twice, but could not be resuscitated.

Post-mortem Examination.—Drs Leslie and Abel of Inverurie, and Dr Laing of Skene were present at the autopsy. The body was well nourished and in high muscular condition, the thighs and upper arms being very thick and firm. The forearms and legs were also very strong, while the hands and feet were small and childlike. The femur was 9 inches long, and the leg from the knee to the sole of the foot 9 inches, the arms being proportionally short. The head was large and hydrocephalic-looking; the body was very thick and the spine straight, except at the lumbar region, where the last vertebra joins the sacrum. At this point there was an acute angle formed between the spine and sacrum, and externally the pelvis looked small and ricketty. The other bones were also more or less affected with the same disease, as shown by the curving of their shafts and the thickening of their epiphyses. On removing the binder and pad the abdomen was found to be tympanitic, and the incision quite disunited; the upper stitch, which was made where the abdominal walls were almost membranous, had given way with the retching, but the pad had prevented the viscera from protruding. No lymph had been poured out at any part of the wound, and when the wires were cut it gaped, allowing the bowels to escape. They were healthy-looking, but slightly distended with flatus. No signs of peritonitis could be traced, and there was only a small black clot in the pelvic cavity.

The uterus, which had been small and well contracted immediately after delivery, had relaxed; and the incision, which after the contraction felt quite small, had regained its original length, and was filled up by a large black clot.



At the brim the conjugate diameter, after the uterus had been removed, was 2¼ inches long, and the transverse close to the sacrum 4 inches, the recess on the left side of the sacral projection being larger than on the right. At the outlet the tuberosities of the ischia were 3 inches apart, and the pubic notch was coarctated, while the axis of the outlet was in the same straight line as that of the brim and nearly quite horizontal.

Remarks.—There is little room for comment on this case, for it resembles in so many points numerous others that have been recorded. For instance, the style of deformity is so ordinary, that I have in my museum two pelves exactly the same in form, but rather larger, and both of the women from whom they were taken were delivered by cæsarean section. Moreover, the patient, as often happens in such cases, was too long ill before being seen by a medical man; and, though the pulse was apparently good when the operation was begun, still there had been now and then marked flagging of the heart's action, and symptoms of threatened collapse. Afterwards, the want of a skilled nurse, and the injudicious management of her friends, did perhaps even more harm than the length of the labour.

As to the manner of performing the operation, I ventured to deviate slightly from the usual mode of proceeding.

Abdominal Incision.—In the first place, though the abdominal incision was as nearly as possible perpendicular, it was made several inches to the side of the middle line, so as to get into the thickness of the rectus muscle. The reasons for adopting this line rather than the linea alba are as follows:—In dissecting the abdomen about the full term of pregnancy, it will be found that the increase of its forward capacity is due almost entirely to the expansion of the central tendon between the recti muscles, the fleshy portions being pushed to either side without undergoing expansion to any extent. The expanded tendon is very thin, and is covered by little more than the skin externally and the peritoneum internally. If one examines the abdomen of a woman newly delivered, it will be observed that the recti muscles come back nearly to their original places; but when she moves or coughs, this loose portion of the parietes between them bulges out and shows its form, and also it can be pushed quite into the abdomen between the contracted muscles. In few women does this space ever regain its former shape or rigidity. The objections to an incision through such a structure are, that it is too mobile to be easily kept in apposition; the stitches also must be near the edge to keep the raw surfaces together, and if so, are liable to get burst when the patient moves; plaster will not stick to it when it is slack, and there is too little surface to pour out enough of lymph to have good adhesion. In this case, the incision accidentally at first was begun too near the middle line; but whenever this was noticed, the knife was swerved slightly to the side into the thicker part of the parietes, and at the post-mortem examination it was seen that all the stitches had held except the one at the top, which was in this attenuated membranous space.

Against the incision between or close to the muscular fibres of the rectus, one objection only can be urged, and that is, that the epigastric artery or some of its branches may be cut; but such an accident would neither add to the patient's danger nor increase materially the difficulty of the operation.

Uterine Incision.—In the history of the post-mortem appearances of the uterus after unsuccessful section, we find two forms of gaping wound in that organ, each having a distinctly different cause.

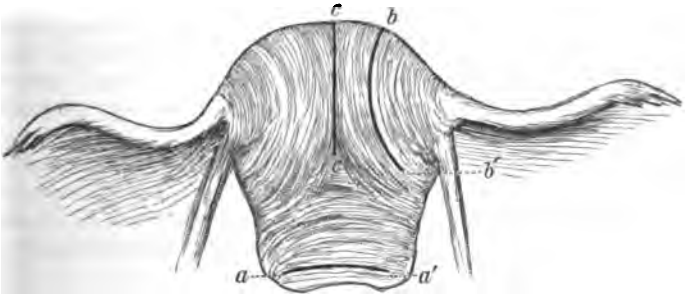
The first form is the passive one, where the wound gapes from end to end, as was found in our case. This arises from the relaxation which usually occurs in newly-delivered moribund women who are dying from collapse. At the post-mortem of such cases I have often seen the uterus lie loose in the abdominal cavity, just as if that organ had been artificially emptied after death; and yet, in these cases, the uterus had contracted after delivery and stopped the tendency to post-partum hæmorrhage some time before the relaxation came on, so that the uterus, being entire, was found to contain little or no clotted blood.

Under such circumstances, this gaping is rather to be considered as a symptom of the mode than a cause of death.

The other form of gaping of the wound is an active one, from normal contraction of muscular fibres that have been cut across. If the patient survives the primary dangers of the operation, and much muscular fibre has been divided transversely, the portion of the wound which does not cross the fibres often heals, while the other portion remains actively open, discharging the uterine secretions into the peritoneal cavity, and causing fatal peritonitis. To avoid this, two means may be adopted—namely, judicious selection of the line of incision, and sewing up of the wound.

To accomplish this by means of the former, there are several lines which may be selected as the best according to the circumstances of the case; for, on account of the situation of the placenta, nature of presentation, etc., it may be more convenient to incise one portion of the uterus than another. A consideration of the arrangement of the uterine muscular fibres will, therefore, give us an idea how to avoid cutting across more muscular tissue than necessary.

Whatever be the ideas held as to the ultimate disposition of these fibres, consisting in all of three layers, the greatest bulk of them is found to run in nearly concentric curves round the three different orifices of the uterus, and thus, on the anterior surface of that organ, are three places where an incision can be planted without fear of active secondary gaping. The first of these (*a*, *a′* in the diagram), a transverse incision across the neck of the uterus as low down as possible without injuring the bladder, was recommended by Dr



Johnson[1] and approved of by Dr William Hunter, but has never, so far as I can ascertain, been tried; but, I have no doubt, where the head projects well over the pubes, making the lower part of the uterus tense, that it would do remarkably well, provided the placenta were out of the way. Were the placenta right in front of the body of the uterus no other line of incision would suit so well. It is also the least vascular and thinnest portion of the uterus, so that if ligatures and sutures were used they could be easily extracted afterwards per vaginam.

Next to the transverse wound near the cervix is the line of incision (*b*, *b′*) adopted (apparently for the first time) in this case. The knife was entered about an inch and a half to the left side of the mesial line, and at the very top of the uterus—that is to say, within the circle of muscular fibres which surround the Fallopian tubes of that side, and it was continued curvilinearly, in accordance with the run of these fibres, as far as could be managed; so that, while active contraction was under observation, neither bleeding nor gaping took place, and also, an hour or two after the operation, the wound must have still held together when post-partum hæmorrhage came on, seeing that there was profuse vaginal discharge without bleeding into the peritoneal cavity.

A vertical incision (*c*, *c′*) in the middle line sometimes succeeds, but failures often happen where the incision, at first agreeing with the parting of the two sets of Fallopian circles, has been carried down too far and run across the transverse fibres surrounding the lower aperture of the uterus. A reference to the diagram will explain these lines of incision.

As to sutures, I have great doubts about their advisability, for the uterine structure at the full period is remarkably friable after a long labour, and tears too easily the moment a solution of continuity is effected. If these stitches be put in, and the usual post-partum swelling takes place (and it does so in proportion to the amount of muscular exertion spent on the labour), the threads or wires would almost certainly cut themselves out, except, perhaps, at the low transverse line of incision, where the substance of the uterus is too thin to swell much.

In conclusion, though these views as to the manner of performing cæsarean section are appended to the history of one case, they are not hasty conclusions suggested by this single performance of the operation, but were arrived at some years ago after a long and careful study of the literature of the subject, and after having made many dissections of dead pregnant and puerperal women; and nothing met with during the course of the operation has induced me to alter my preconceived views concerning it, except with regard to some minute details.

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[1] R. W. Johnson. New System of Midwifery. Second edition. 1786. P. 308.

Part Second.

REVIEWS.

Manual of Human and Comparative Histology. Edited by S. STRICKER. Translated by HENRY POWER, M.B. Lond., F.R.C.S. Vol. I. 8vo.

THIS handsome and most interesting volume forms another of those valuable contributions to science published from time to time by the New Sydenham Society. The idea of translating it, we are told in the preface, originated from a consideration of the remarkable paucity of works on this subject in the English language. Surprising as such a state of matters may appear, there is nevertheless no denying the fact. Most of the detached treatises on the subject which do exist are either incomplete as compendiums of histology, or have been written at a time when the methods and means of observation were very far behind that perfection they have recently attained. It is, therefore, with much pleasure we bear testimony to the concentration of knowledge presented in this work, and the able manner in which it has been originally edited by Professor Stricker, and subsequently translated by Mr Power. The plan of the book is that adopted in many other well-known works in medicine. The subject is divided into departments, in each of which a different author contributes a separate monograph; while to every such section is appended a list of most or all of the known authorities in connexion with it. Many excellent woodcuts illustrate the subjects described; and as the translation and printing occupied only eleven months after the appearance of the original publication, it may be said to comprehend the latest advances made in histological knowledge. An introductory chapter discusses the general methods of investigation employed by modern histologists. The chief instrument at our disposal for the examination of the finer *structure* of the various organisms is of course the microscope. But, besides their structural arrangement, a knowledge of the vital properties, and the phenomena exhibited by living tissues, has of late become an acknowledged and most important branch of microscopical research. Alluding to this subject, we find in this chapter the following remarks:—

"The technical methods of research applicable to these two subjects are nevertheless different. When we desire to follow, and ultimately to modify, the vital processes under the microscope, other means of research are required than when we merely wish to acquaint ourselves with the forms of the elementary parts. Moreover, experiments which are performed under the microscope differ according to whether they are conducted on living or on dead bodies. The sensitiveness of the former to external influences, makes—even in the microscopically small compass of the instrument, and bearing in mind the management necessary for its use—experiments possible under circumstances which are not practicable in the case of dead tissue. Thus we find that changes can be induced in living tissue by slight variations in temperature, by feeble currents of electricity, and by weak solutions of acids; whilst the operation of these agents must be much more energetic for the purpose of experiment on the dead body, and this is not always agreeable for the observer, nor suitable for the more delicately constructed instruments. The greater sensitiveness of the living organism demands proportionate delicacy in its treatment, but at the same time facilitates experiment; and to this we may ascribe the circumstance that experimentation on the living body has gained so much in value during the last few years, that is, during the period that the investigation of living tissues has been so extensively undertaken."

Passing to the subject of cells—perhaps the leading subject in histological research—we find an elaborate and comprehensive although brief résumé of the various theories held from time to time on this matter, and a somewhat exhaustive inquiry into the modern views existing in respect to these organisms. The word "cell," however, seems to be unfitted in its usual acceptation for conveying the idea attaching to it at the present day. Indeed, it is somewhat difficult to state, much less to demonstrate with precision, the exact differential characters distinguishing and separating the cell of Max Schultze—the unenclosed mass of protoplasm, with a nucleus—or that of Brücke (the same, without a nucleus) from the "isolated fragment" of such tissue, to which the name of cell appears to be denied. It would be a change for the better were some other term adopted here than that originally employed to designate the vesicular structures so described in the time of Schwann and other earlier investigators.

An interesting although rather abstruse chapter follows, on the much-discussed subject of connective tissue. It would be out of place attempting here to epitomize the whole gist of this chapter; but as some difference seems to exist in the construction put upon the term by different authorities, we may quote the definition here given:—

"It has become customary in histology to associate together a series of tissues under the term connective tissues. From these tissues all those portions of the animal body are formed, which can be regarded in the most general significance of the terms as the basement membrane, supporting layer or investment for epithelial structures, blood, lymph, muscles, and nerves. In the Vertebrata the group of connective substances includes connective tissue, cartilage, bone, the tissue of the cornea and dentine.

"The connective tissues are developed from the middle germinal layer, in which blood and muscle also originate. The typical connective substances are recognised histologically by the circumstance that they contain extensive and continuous layers of material (intercellular substance), which, when compared with the cellular ·tures distributed through its substance (protoplasma), or the morphological elements in other tissues, always appears as a more passive substance, and one which participates but slightly in the processes characteristic of life. These masses consist for the most part of gelatine-forming substances, such as collagen, chondrogen, and ossein. The connective tissues frequently pass by substitution or genetic succession into one another; they appear therefore to be morphologically equivalent; so that in many instances certain organs, or parts of organs, belonging to animals nearly allied to one another, are formed sometimes of one, sometimes of another of these tissues. . . .

"A series of various forms of tissue must be included under the term connective tissue. This name was originally given in 1830, by Johann Müller, to the tela cellulosa of the older anatomists; but as at that time observers had already convinced themselves that this tissue is essentially composed of very fine fibres, which may be proved to be the chief constitutent of tendons, ligaments, membranes, and other formed portions of the organism, all these tissues, together with the tela cellulosa, were included amongst those portions of the organism which are composed of connective tissue. Formerly, however, the description of this tissue was limited to a fibrous form of the tissue, possessing very definite histological and chemical characters.

"This limitation has, however, been greatly extended by custom, and just as, in consequence of their functional agreement and continuity of substance, a series of microscopically different structures are combined under a common term—as muscle, nerve, etc.—we are on similar grounds led to a general application of the term connective tissue, and to distinguish its several forms. Amongst the microscopic morphological constituents thus distinguishable in connective tissue may be enumerated cells; networks and trabeculæ, developed from cells, consisting of peculiar delicate unbranched fibres (connective tissue fibrils), for the most united into fasciculi; and, lastly, fibres which are differentiated from those above named by the resistance they offer to the action of acetic acid and alkalies, by their repeated division, by their forming networks, and by their fusing into lamellæ (elastic fibres)."

The minute anatomy and structural characters of special tissues —nervous, muscular, glandular, etc.—occupies the greater share of the remaining portion of the volume. The special organs themselves—the tongue, stomach, spleen, heart, intestines, etc.—are each elaborately discussed; and, in dealing with them, most or all of the more recent researches are given, with full and copious references to the authorities quoted.

Perhaps the subject of spectrum analysis scarcely falls under the province of histology, and this may account for certain recent researches in this department of physiology being passed over in the otherwise copious and exhaustive article devoted to the blood. In conclusion, we must specially advert to the admirable monograph by Waldeyer on the Structure and Development of the Dental Tissues—a subject on which as yet no standard work of reference, in regard to their morbid anatomy and pathological conditions, seems to exist, but which want is ably compensated, to a certain extent, by the knowledge here afforded of their physiological peculiarities.

As a work of reference, however, on all it treats of, we can cordially recommend the volume before us. The translation, as already stated, is only about one year behind the original, and it is expected that the second volume will be issued still more quickly —being promised in the autumn of the present year.

Some Remarks on Diabetes, especially with reference to Treatment. By WILLIAM RICHARDSON, M.A., M.D. London: H. K. Lewis: 1871. Pp. 122.

SUCH is as yet the obscurity prevailing in regard to the treatment of diabetes that any remarks on it are most eagerly listened to, not the less when they are commenced by the significant statement that "ten years ago" the author was attacked by the disease.

A personal feeling in regard to the disease ought to be a sufficient guarantee for the trustworthiness of an author's statements, though not certainly always of his reasonings; and if we were certain that the author would take our remarks in good part, and endeavour to aid us in ascertaining the truth, a book such as that now before us would be worth criticising line by line, especially as he tells us that he has not only cured himself, but many others, by a faithful and patient carrying out of the system advocated. The author commences with a history of the various theories of diabetes. The earlier and purely chemical theories as to the origin of this disease possess little interest for the profession nowadays. With Claude Bernard in 1848 our modern views commence. He proved, as was supposed conclusively, that sugar was a normal production of the liver, and therefore an exaggerated performance of its normal function the proximate cause of diabetes—an exaggeration of function which the effects of artificial lesion of the fourth ventricle led him to believe might depend upon disordered innervation. In 1860, Dr Pavy disputed Bernard's conclusions, while fully admitting the accuracy of his experimental results; that is, he admitted that sugar was certainly to be found in a dead liver, but asserted that it was never present during life, its production being prevented by the influence of the nervous system. Schiff, Jaeger, Meissner, etc., confirmed Dr Pavy's views, and aided in propounding what has been termed the "theory of ferments"—a hypothetical substance analogous to "diastase" being supposed by Pavy to be always present in the blood, but prevented from acting by nervous influence till after death, or in diseased conditions, when the amyloid matter of the liver was changed by it to sugar. Schiff believed that this diastase vas never found in the liver in the normal state, but that it was und in the blood generally after death, or even only after temporary or partial obstruction to the circulation, such as may be produced by putting a tight ligature round a limb. The diastase, according to him, may be formed anywhere, but it only becomes efficacious in the liver, which is the passive centre for the formation of sugar. The glycogenic function of the liver seemed to be doomed, when, in 1868, Dr Flint, sen., of New York, came to the rescue with an ingenious solution of the difficulty, viz., that the liver contains no sugar during life, because the mass of blood passing through it washes out the sugar as fast as it is formed; while after death, or when the circulation is in any way interfered with, the transformation of glycogenic matter into sugar still goes on, and the sugar being no longer carried off can then be detected in the liver. This he attempted to prove by first verifying the fact, that no sugar is to be found in a liver rapidly removed from a living animal, and then showing its presence in the blood of the hepatic veins after tying the vena cava above and below these veins. This operation took sixty seconds to perform, and Dr Pavy's retort was, that so rapidly is sugar formed in the liver after death that "the result was to have been expected, considering the expenditure of time involved in applying the ligatures."

At this epoch Prof. D. T. Lusk, of New York, stepped forward, and by catheterizing the heart through the jugular vein during life, obtained a good supply of hepatic blood, largely diluted with the comparatively non-saccharine blood of the vena cava; this he compared with blood obtained direct from the jugular vein as affording a fair sample of ordinary blood—non-hepatic in its origin. The result was, that the blood from the right side of the heart was found to contain from two to four times as much sugar as that from the jugular vein; and from this, of course, it falls to be concluded that the hepatic blood contains a by no means insignificant comparative amount of blood previous to its dilution with the blood from the vena cava. Therefore, it seems we can no longer doubt as to the glycogenic function of the liver, which, instead of being merely an organ for the production of bile, seems actually to be a huge manufactory of sugar and urea, from which the bile trickles off as a comparatively insignificant, though by no means unimportant waste product. Indeed, there is nothing perhaps which proves more conclusively how little we know as to the uses of our organs —as to practical physiology—than a comparison of the views hitherto entertained as to the functions of the liver with those now dawning upon us. But even after we have acknowledged the preeminence of the liver in the glycogenic function, what a hiatus still remains before we can in any degree understand the production of diabetes, or how it is to be cured! Turn where we may, the fable of Curtius for ever meets us as an inevitable fact. Everywhere around us are yawning gulfs, which, perhaps, not even one life's work will close; but how few are willing to leap into the abyss; yet there lies true fame.

Our author has not got beyond Flint; he has never heard of

Cantani, who, acknowledging the glycogenic function of the liver, and also the heat-producing power of sugar when burned in the lungs, and who, finding, with Balthazar Forster, that diabetics possess all an anormally low temperature, was led to theorize—what seems scarcely a theory—that the sugar or glucose thus formed could not possibly be a true glucose; he therefore termed it paraglucose, and supposed there was something in its composition which prevented its combustion in the body,—which must be true, or all our combustion theories must be wrong. Cantani thereupon set about supplying the body with something which could take the place of sugar in producing heat; this he proposed to do by giving lactic acid pretty freely, as an intermediate product between sugar and carbonic acid—one likely, therefore, to be capable of being burned in nature's laboratory. The results, Cantani says, he has attained are something remarkable; and we may say that the results we have attained by this treatment have been also remarkable,—though, for want of a properly constituted physiological institute, we can only indicate them as sequences of the treatment, and not definitely claim them as results. Besides, however, supplying the body with lactic acid to burn, Cantani takes every precaution to give the erring organ rest.

Richardson divides the disease into three stages: in the first of which a restriction of the amylaceous food is sufficient to cause a complete disappearance, or, at all events, a great restriction, in the amount of sugar passed; in the second stage, sugar is formed even from the cellulose of the animal food used as diet; while in the third it is formed from the tissues of the patient himself. The first being of course the most curable stage of the disease; the second, a stage in which palliation, rather than cure, is possible; and the third, one in which palliation alone is possible. In these divisions Cantani agrees, for sugar of course substituting paraglucose; and all that we have seen of this disease leads us to acknowledge the correctness of this view. Under all circumstances, the lactic acid improves the condition and temperature of the patient; under some, it seems the nearest approach to a cure we have yet seen. Diabetics resemble epileptics, in so far that almost any change is beneficial; with this exception, that in epileptics the interference must be vigorous, and may be anything, while in diabetics the change must be cautiously conducted, and in some theoretically right direction. Any man with a very large experience and a predilection for bromide of potassium, for arsenic, opium, or soda, will soon collect a certain amount of favourable statistics, but will as certainly exclude a larger amount of statistics unfavourable to his views. What amount of truth may be in Cantani's views we know not; but a system of treatment equally successful in young persons with a diabetes of short standing, and in older patients ill for longer periods, must have some foundation of truth in it, which it is desirable to inquire into.

Dr Richardson believes that diabetes is always a functional disease, and therefore curable. We wish we could agree with him. His treatment consists mainly in the administration of iron and chlorate of potass, with alkaline baths and regular exercise, with a high recommendation of the Tunbridge Wells and the Vichy water. He cautions against long journeys by diabetic patients, and says he has not unfrequently seen death rapidly follow such imprudent exertion. In this he is quite right; the lives of diabetics seem to hang by a thread, and any sudden change of diet or forced exercise, even though it be only a journey by rail, is fraught with danger, and must be cautiously carried out; sudden death from exhaustion, diarrhœa, or latent pneumonia being the not unfrequent result of such experiments.

We have read Dr Richardson's work with much interest. He is a painstaking and accurate observer, and we think that, with his limited opportunities, he would have done more service to medicine by an accurate record of his own experiences, than by attempting anything more ambitious. That was the gulf before him, which, filled up, might have given solid ground for the rest of us to travel on.

A Practical Treatise on the Medical and Surgical Uses of Electricity, including Localized and General Electrization. By E. M. BEARD, A.M., M.D.; and A. D. ROCKWELL, A.M., M.D. New York: Wood and Co.: 1871. 8vo, pp. 698.

Galvano-Therapeutics. By W. B. NEFTEL, M.D. New York: Appleton and Co.: 1871. 8vo, pp. 161.

DR NEFTEL'S little work is simply the precursor of a larger work on diseases of the nervous system, and on the relations of the galvanic current to physiology, medicine, and surgery. It is specially full of details in relation to electro-otiatrics, mainly based upon the researches of Brenner, and on the galvano-therapeutics of the sympathetic nerve, containing also many other interesting notices of the treatment of various other nervous diseases by galvanism or the direct current. It may be useful to those already acquainted with the subject, but it is far too curt to be of much value as a guide to those ignorant of the matter, while it is too one-sided to be accepted as a truthful statement of the proper place and position of galvano-therapeutics. With the professors of this art the motto of "Nothing like leather" seems never to be lost sight of, and there seems to be no disease which is not amenable to galvano-therapeutics. Yet if we endeavour to ascertain what is electricity, and how its action is variously modified by the various modes in which it is employed, we find the greatest difficulty in seeing our way to any grains of truth. At one time lauded as life itself, as the essence of nervous influence; at another it is depreciated as but the result of chemical action: now it is the constant current which is to work wonders, and the induced is reviled as of no value; while at another time and by another author the reverse is upheld. We suppose there can be no doubt but that electricity however produced is not only the result of chemical action, but also a powerful agent in producing chemical change, and therefore a most important agent in modifying the nutritive conditions of the living body; at the same time, we have as yet obtained no definite knowledge how we shall best employ this powerful modifying agent in medical diseases. A great deal of empirical knowledge of this kind is afloat, but as yet it is far too vague to be of much value. At present, stimulated mainly by the inquiries of Runak and Duchenne, electro-therapeutics is making a vigorous effort to assert its own peculiar value, which its professors are not prone to under-estimate. But if we take a wide survey of the field thus indicated, and examine the claims of the several modes of application of the electric fluid, there is so little unanimity in the statements of its advocates that we are fain to wait for more precise indications before we accept the therapeutics of electricity as anything more definite than a somewhat hopeful empiricism, to be resorted to when other means fail.

Drs Beard and Rockwell have sought to embody in their work all that is at present known of the application of electricity to the treatment and diagnosis of disease, both medical and surgical, and we commend it to those who are groping after truth in this direction, as a useful guide; at the same time, much that they have advanced as to what they have originated and described as a general electrization, requires to be otherwise confirmed before we can accept it as true. Nevertheless their work is thoroughly exhaustive and well up to the times; it is copiously illustrated, furnished with a good index and glossary of electro-therapeutic terms, and is calculated to afford much information to those who are feeling their way in this direction. The chapter on electro-surgery is especially instructive, and contains a good summary of all that has been done in this direction of late years.

Letter from C. MACNAMARA, Surgeon to the Chandney and Ophthalmic Hospitals, Calcutta, *to* J. SIMON, F.R.S., F.R.C.S., Medical Officer to the Privy Council.

Remarks on Mr Clark's Calcutta Drainage Scheme. By DAVID B. SMITH, M.D., Sanitary Commissioner for India. Calcutta, 1871.

MR MACNAMARA, in a letter to Mr Simon, the Medical Officer to the Privy Council, points out that it is desirable to obtain statistics of the diffusion of cholera in India, not only from the jail and army, but also from the civil population of the country, which he would "consider an honour to correlate and arrange." The Government of India have, however, not complied with this proposal of Mr Macnamara, who thus expresses his dissatisfaction:—"It is evidently useless for me, or any one holding the ideas I do regarding the propagation of cholera, to expect a hearing from those in authority in this country, and much less to be able, beneficially, to influence their actions; at any rate, until such time as when, in the ordinary course of nature, the obstacle (*genus homo*) at present impeding correct views and salutary action in these matters is removed." It appears, however, that more than one person requires to be removed, by opportune death or invaliding, ere Mr Macnamara's theories are carried out by the Indian Government. "I can only speak," he goes on, "from personal experience, but my firm conviction is, that with the differences of opinion held by Mr Strachey, Sanitary and Medical Officers, on the subject of cholera, together with the want of forethought exercised by those whose duty it is to regulate these matters, that any number of vessels carrying either pilgrims, or other human freight, or merchandise, contaminated with cholera poison, might at any time proceed from this place, not only to Arabia, but directly to Europe. Attempts were made, as late as last year, to regulate the circumstances of pilgrims and emigrants leaving this port, but I fear it is difficult for men to legislate for the prevention of a disease like cholera when they have no definite conception of its nature."

Mr Macnamara then goes on to show that differences of opinion exist as to the means by which cholera spreads—a fact of which there can be no doubt, though one might think otherwise from the confident manner in which some medical men are at present lecturing the public on the subject. Mr Macnamara proves, by quotations, that Dr Cunningham, the Imperial Sanitary Commissioner of British India, and Dr Muir, the head of the Queen's Medical Service in India, regard the view that drinking water is the principal medium of spreading the disease as an unproved hypothesis, whilst Drs Buchanan and J. N. Radcliffe remark (1870)—"The propagation of certain epidemic diseases, especially cholera, intermittent fever, and diarrhœa, among communities, as the result of excremental pollution of air and water, is one of the best established facts of sanitary medicine. It is a fact which has been admitted for over a century."

Here we may warn young gentlemen beginning to study medical literature, that when they read that a point has been "incontestably proved," or is "now generally admitted," or "admitted for over a century," they ought to suspect the writer is trying to mislead them.

Mr Macnamara gives a number of very carefully collected details about the diffusion of cholera in Calcutta. He complains very justly of the large number of ponderous blue-books which for the last ten years or so have been printed by the Indian Government.

"The aggregate weight of these reports issued for the year 1868, by the newly-created Sanitary Department alone, in the Bengal Presidency, amounts to no less than 13 lbs., exclusive of jail reports, and those issued by the Indian Medical Department, Dispensaries, and so on; whereas the last Army Medical Department Report (British) weighs only 1¾ lbs.; this latter contains the Sanitary, Statistical, Medical—in fact, the entire Medical History of the British Army in India, and every other part of the world, for the year 1868."

His complaints to the sympathetic ear of Mr Simon leading to no practical result, Mr Macnamara deals with his adversaries in the pages of the *Indian Medical Gazette*, of which he is now the editor. For such a post he is very well fitted, though in our opinion his reputation is too much committed to a certain hypothesis about the diffusion of cholera to permit him to arrange statistics upon the subject in a calm and impartial manner. We do not know whether our readers will think he has strengthened his position by the following argument, which appeared in the number for 1st June 1871:—

> "A writer in the last number of the *Edinburgh Medical Journal* remarks: 'Mr Macnamara, in his book on cholera, predicted that the Suez Canal, by bringing ships from India more rapidly into European waters, would render Europe more liable to be visited by cholera. As yet his prophetic powers appear at fault.'
>
> "It may possibly be true that Europe runs no risk of an importation of cholera *viâ* the Suez Canal; nevertheless, I would point to the facts illustrated by the cholera diagram, to show how exceptionally low the death-rate from this disease has been among the *inhabitants of Calcutta* since the opening of the canal at the close of 1869: the same statement is applicable to Bombay; and beyond this, I would call particular attention to the circumstance that, on the 1st of January 1870, the Calcutta water-works were opened, and since then vessels leaving this port, in place of filling their tanks from the polluted Hooghly, have taken in water supplied from the admirable works above mentioned—water which, the Chemical Examiner to Government informs me, is as good as, if not superior to, any served from the finest works in England. Our emigrants leaving Calcutta for the West Indies or Mauritius are likewise provided with this excellent water, and the result seems already to have manifested itself in the lower rate of mortality from cholera among these people on the voyage to their new homes. It is, however, impossible for me to enter into details on a subject of this kind; I would only remark, that it has always appeared to me a weak point in Professor Pettenkofer's theory as to the origin of cholera, that the disease should at times break out among persons on board vessels after they had left port for some sixteen days, as in the case of the New York and Sewanton, or, as in the instance of the Gertrude, which had been at sea for twenty-four days before a case of cholera occurred on board. Evidently emanations from the soil could not affect persons in the middle of the ocean, and it is hardly possible the disease could have been contracted and remained dormant in the systems of these people for sixteen and twenty-four days, then bursting out among them without apparent rhyme or reason. But it may be argued, Do not the same objections apply to the watery theory of cholera? I think not, for the more carefully we study the matter the clearer it becomes that light and heat play a most important part in the oxidation of organic matter, either living or dead. If water containing organic matter were stowed away in iron tanks, it might remain in the dark cool hold of a ship for many days unaffected the atmosphere; but bring this water upon deck for domestic purposes, a few hours the properties of the organic matter it contained may be

completely altered; and according to my experience, water polluted with cholera dejecta might, under these circumstances, become a cholera-giving fluid if swallowed in any considerable quantities without having been previously effectually filtered or boiled. I would here beg to remark in reference to these views, that it has been observed by several writers that the account I have given in my work on Cholera (page 196) is defective in that details are not produced of the precise circumstances of this remarkable case. On referring to the text I find it is evident that there is truth in these remarks, but I would now distinctly state that the case in question came directly under my own observation and that of a friend. Any further statement on this matter seems to me to be unnecessary; for with the detail I have published before them, those who still refuse to believe would not, I am convinced, be persuaded though one rose from the dead to assure them of the truth. I can only add, if any professional man requires further information on the subject, he may apply to me for particulars, and I will with pleasure supply the details he may require with regard to the particulars of this case; but in a scientific point of view it is fully discussed in my published work on the subject; nor will any amount of explanation I can give further elucidate the matter."

In a pamphlet of twenty-one pages, Dr David B. Smith advocates the dry-earth conservancy system, as being the best for Calcutta. He insists, in opposition to Mr Clark and others, that it is preferable to the removal of the solid sewage matter and water drainage, and that it would pay its own cost if the matter were used in manuring reclaimed land. Dr Smith handles the subject with his usual ability, and pushes his adversary hard.

The following quotation from Dr Cornish, Sanitary Commissioner of Madras, may be of general interest:—

"There is no doubt that the 'dry' system of conservancy is the best that could be devised for a country where the temperature of the air is always high.

"The evils of the sewage system in Europe are now gradually becoming apparent, and in another quarter of a century there is no question but that the nuisance will have become so serious as to lead to a thorough change of system. The rivers flowing through towns are in many instances already so polluted, that fish will not live in them; nor can the public drink of such water with impunity." Again, "the water-closets, house-drains, and sewers in European towns, it may be noticed, remain inoffensive during the months of spring and winter; but as the temperature of the air increases, so surely do the *cloacæ* begin to emit offensive effluvia, and the hotter the summer and autumn, the greater the nuisance from drains and running streams polluted by sewage. Whenever the temperature of water rises above 60° Fahr. it ceases to absorb gases well, and becomes therefore a bad vehicle for the removal of organic matter in a state of decomposition."

In our own country, we believe the dry-earth system to be very useful, especially for out-of-door closets. At Broadmoor Criminal Lunatic Asylum, which we recently visited, there was an in-door apparatus that worked well. No smell was perceptible.

Dry earth is, of course, not so easily got in our country as in India, hence arrangements should be made for storing it in summer.

INFORMATION REGARDING MEDICAL EDUCATION AND EXAMINATIONS.

THE following are the Regulations of the General Medical Council on the subject of Medical Education and Examinations:—

I.—PRELIMINARY EXAMINATIONS.

1. That Testimonials of Proficiency, granted by the National Educational Bodies according to the subjoined list, may be accepted, the Council reserving the right to add to, or take from, the list.

List of Examining Bodies whose Examinations fulfil the Conditions of the Medical Council, as regards Preliminary Education.

(1.) UNIVERSITIES OF THE UNITED KINGDOM.

Oxford.—Examination for a Degree of Arts. Responsions, Moderations, Local Examinations (Senior), Certificate to include Latin and Mathematics.

Cambridge.—Examination for a Degree in Arts. Previous Examination. Local Examinations (Senior), Certificate to include Latin and Mathematics.

Durham.—Examination for a Degree in Arts. Examination for Students in their second and first years. Registration Examination for Medical Students. Local Examinations (Senior), Certificate to include Latin and Mathematics.

London.—Examination for a Degree in Arts. Matriculation Examination.

Aberdeen, Edinburgh, Glasgow, and St Andrews.—Examination for a Degree in Arts. Preliminary Examination for Graduation in Medicine or Surgery. Examination of (Senior) Candidates for Honorary Certificates under the Local Examination of the University of Edinburgh.

Dublin.—Examination for a Degree in Arts. Entrance Examination.

Queen's University (Ireland).—Examination for a Degree in Arts. Entrance Examination. Examination for the Diploma of Licentiate in Arts. Previous Examination for B.A. Degree.

(2.) OTHER BODIES NAMED IN SCHEDULE (A) TO THE MEDICAL ACT.

Royal College of Surgeons of England.—Examination conducted under the Superintendence of the College of Surgeons, by the Board of Examiners of the Royal College of Preceptors.

The Society of Apothecaries of London.—Examination in Arts.

Royal Colleges of Physicians and Surgeons, Edinburgh.—Preliminary Examination in General Education, conducted by a Board appointed by these two Colleges combined.

Faculty of Physicians and Surgeons of Glasgow.—Preliminary Examination in General Literature.

Royal College of Surgeons in Ireland.—Preliminary Examination, Certificate to include Mathematics.

Apothecaries' Hall of Ireland.—Preliminary Examination in General Education.

(3.) EXAMINING BODIES, IN THE UNITED KINGDOM, NOT INCLUDED IN SCHEDULE (A) TO THE MEDICAL ACT.

Royal College of Preceptors.—Examination for a First Class Certificate.

(4.) COLONIAL AND FOREIGN UNIVERSITIES AND COLLEGES.

Universities of Calcutta, Madras, and Bombay.—Entrance Examination, Certificate to include Latin.

M'Gill College, Montreal.—Matriculation Examination.

University of Toronto, King's College, Toronto, Queen's College, Kingston, Victoria College, Upper Canada.—Matriculation Examination.

King's College, Nova Scotia.—Matriculation Examination. Responsions.

University of Fredericton, New Brunswick.—Matriculation Examination.

University of Melbourne.—Matriculation Examination, Certificate to include all the subjects required by the General Medical Council.

University of Sydney.—Matriculation Examination.

Codrington College, Barbadoes.—1. English Certificate for Students of two years' standing, specifying the subjects of Examination. 2. Latin Certificate, or "Testamur."

Tasmanian Council of Education.—Examination for the Degree of Associate of Arts, Certificate to include Latin and Mathematics.

Christ's College, Canterbury, New Zealand.—Voluntary Examination, Certificate to include all the subjects required by the General Medical Council.

The Examiners for Commissions in the Military and Naval Services of the United Kingdom.—Certificate to include all the subjects required by the General Medical Council.

Cape of Good Hope.—Third Class Certificate in Literature and Science granted by the Board of Public Examiners.

N.B.—A Degree in Arts of any University of the United Kingdom or of the Colonies, or of such other Universities as may be from time to time recognised by the General Medical Council, will be considered a sufficient testimonial of proficiency.

2. That it be recommended to the Licensing Boards not to accept the Certificate of Proficiency in General (preliminary) Education from any of the Bodies, the names of which are contained in the list annually circulated, unless such Certificate testify that the Student to whom it has been granted has been examined in :—1. English Language, including Grammar and Composition.[1] 2. Arithmetic, including Vulgar and Decimal Fractions. Algebra, including Simple Equations. 3. Geometry—First two books of Euclid. 4. Latin, including Translation and Grammar.

And in one of the following optional subjects :—Greek. French. German. Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.

3. That students who cannot produce any of the Testimonials referred to in the first Recommendation be required to pass an Examination in Arts, established by any of the Bodies named in Schedule (A) to the Medical Act, and approved by the General Medical Council.

II.—REGISTRATION OF MEDICAL STUDENTS.

1. Every Medical Student shall be registered in the manner prescribed by the General Medical Council.

2. No Medical Student shall be registered until he has passed a Preliminary Examination, as required by the General Medical Council.

3. The commencement of the course of Professional Study recognised by any of the Qualifying Bodies, shall not be reckoned as dating earlier than fifteen days before the date of Registration.

4. The Registration of Medical Students shall be placed under the charge of the Branch Registrars.

5. Each of the Branch Registrars shall keep a Register of Medical Students according to the subjoined Form :—

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[1] The General Medical Council will not consider any Examination in English sufficient that does not fully test the ability of the Candidate,—*1st*, To write a few sentences in correct English on a given theme, attention being paid to spelling and punctuation as well as to composition. *2d*, To write a portion of an English author to dictation. *3d*, To explain the grammatical construction of one or two sentences. *4th*, To point out the grammatical errors in a sentence ungrammatically composed, and to explain their nature. *5th*, To give the derivation and definition of a few English words in common use.

Form for the Registration of Medical Students.

Date of Registration.	NAME.	Preliminary Examination and Date.	Place of Medical Study.

6. Every person desirous of being registered as a Medical Student shall apply to the Branch Registrar of the division of the United Kingdom in which he is residing, according to the annexed Form, which may be had on application to the several Qualifying Bodies, Medical Schools, and Hospitals; and shall produce or forward to the Branch Registrar a Certificate of his having passed a Preliminary Examination, as required by the General Medical Council, and a statement of his place of Medical Study.

Form of Application for Registration as a Medical Student.

I hereby apply to be registered as a Student in Medicine, in conformity with the Regulations of the General Council of Medical Education and Registration of the United Kingdom, for which purpose I submit the following particulars:—

NAME OF APPLICANT. (To be written in words at length.)		Preliminary Examination.	Date of Preliminary Examination.	Place of Medical Study.
Surname.	Christian Name.			

Applicant's Signature ———.
Address ———————.
Date of Application ———.

To the Registrar of the Branch Council for ———.

N.B.—The above Form of Application, duly and legibly filled up, must be forwarded to the Registrar, post free, and be accompanied by a Certificate of the Applicant's having passed a Preliminary Examination, as required by the General Medical Council; and a statement of his place of Medical Study.

The Certificate of Examination must testify that the Student has been examined in,—1. English Language, including Grammar and Composition; 2. Arithmetic, including Vulgar and Decimal Fractions; Algebra, including Simple Equations; 3. Geometry—First two books of Euclid; 4. Latin, including Translation and Grammar. And in one of the following optional subjects: —Greek, French; German; Natural Philosophy, including Mechanics, Hydrostatics, and Pneumatics.

7. The Branch Registrar shall enter the Applicant's name and other particulars in the Students' Register, and shall give him a Certificate of such Registration.

8. Each of the Branch Registrars shall supply to the several Qualifying Bodies, Medical Schools, and Hospitals, in that part of the United Kingdom

of which he is Registrar, a sufficient number of blank Forms of Application for the Registration of Medical Students.

9. The several Branch Councils shall have power to admit special exceptions to the foregoing regulations as to Registration, for reasons which shall appear to them satisfactory.

10. A copy of the Register of Medical Students, prepared by each of the Branch Registrars, shall be transmitted, on or before the 31st December in each year, to the Registrar of the General Council, who shall, as soon as possible thereafter, prepare and print, under the direction of the Executive Committee, an Alphabetical List of all Students registered in the preceding year, and supply copies of such authorized list to each of the Bodies enumerated in Schedule (A) to the Medical Acts, and through the Branch Registrars to the several Medical Schools and Hospitals.

11. The several Qualifying Bodies are recommended not to admit, after October 1870, to the final Examination for a Qualification under the Medical Acts, any Candidate (not exempted from Registration) whose name had not been entered in the Medical Students' Register at least four years previously.

In the case of Candidates from other than Schools of the United Kingdom, the Branch Councils shall have power to admit exceptions to this recommendation.

The Branch Councils are desired to take means to make these regulations known to the Medical Students at the various Medical Schools.

III.—AGE FOR LICENSE TO PRACTISE.

1. That the age of twenty-one be the earliest age at which a Candidate for any Professional License shall be admitted to his final Examination; that the age shall, in all instances, be duly certified; and that a Return of any exceptions to this recommendation allowed by the Licensing Bodies, together with the reasons for such exceptions, be transmitted to the Branch Council of that part of the United Kingdom in which they have been granted.

2. That no License be obtained at an earlier period than after the expiration of forty-eight months subsequent to the Registration of the Candidate as a Medical Student.

IV.—PROFESSIONAL EDUCATION.

1. That the course of Professional Study required for a License shall comprehend attendance during not less than four Winter Sessions, or three Winter and two Summer Sessions, at a School recognised by any of the Licensing Bodies mentioned in Schedule (A) to the Medical Act.

2. That the following are the subjects without a knowledge of which no Candidate should be allowed to obtain a qualification entitling him to be registered:—1. Anatomy. 2. General Anatomy. 3. Physiology. 4. Chemistry. 5. Materia Medica. 6. Practical Pharmacy. 7. Medicine. 8. Surgery. 9. Midwifery. 10. Forensic Medicine.

Chemistry should include a knowledge of the principles of Chemistry, and of those details of the science which bear on the study of Medicine.

Medicine and Surgery should include a knowledge of Systematic and Clinical Medicine and Surgery, and also of Morbid Anatomy.

3. That it be recommended to the several Licensing Bodies that the courses of instruction required by them be framed in such a manner as to secure a due share of attention, both to preparatory branches and to those more strictly connected with the Practice of Medicine and Surgery; and that it be suggested accordingly to these Bodies, that their regulations should be such as to prevent attendance upon Lectures from interfering with Hospital and Clinical Study.

4. That the Council will view with approbation any encouragement held out by the Licensing Bodies to Students to prosecute the study of the Natural Sciences before they engage in studies of a strictly professional character.

V.—PROFESSIONAL EXAMINATION.

1. That it is desirable that the different Licensing Bodies should combine their Examinations, when this is practicable, so as to secure that the knowledge of every Practitioner whose name appears on the Register shall have been tested in all the subjects of Professional Education which the Council has determined to be essential, viz.:—1. Anatomy. 2. General Anatomy. 3. Physiology. 4. Chemistry. 5. Materia Medica. 6. Practical Pharmacy. 7. Medicine. 8. Surgery. 9. Midwifery. 10. Forensic Medicine.

2. That those Licensing Bodies which have not already done so, be requested to furnish a statement of the dates of their Examinations and of the modes in which such Examinations are conducted, whether by written, oral, or practical Examination, and of the length of time a Candidate is under Examination in each or all of these ways; and that the Registrar transmit these Reports to the Members of the Council, in order that they may be taken into consideration at the next meeting of the several Branch Councils.

3. That the Professional Examination for any License be divided into two parts; the first embracing the primary or fundamental branches directly connected with the practice of Medicine and Surgery; that the former be not undergone till after the close of the Winter Session of the second year of professional study; and the latter, or final Examination, not till after the close of the prescribed period of professional study.

4. That the Examination in Physics, Botany, and Natural History may be undergone at an earlier period than the first Professional Examination.

5. That the Professional Examinations be conducted both in writing and orally; and that they be practical in all branches in which they admit of being so.

6. That not less than two Examiners, or one Examiner with an Assessor, should be present at every Oral Examination.

7. That the Oral Examinations should be so far public as to be open at least to the Medical and Surgical Graduates, or members of the Examining Body.

8. That the questions to be answered in writing should be so numerous, and embrace such a variety of the details of each subject, as may adequately test the proficiency of the Candidate; and that they should be submitted to the whole body of Examiners for consideration and revision, if desirable, before being proposed to the Candidates.

9. That the written answers should be submitted to more than one of the Examiners.

10. That excellence in one or more subjects should not be allowed to compensate for failure in others.

11. That if a Candidate be rejected for failure in any one subject, he should be re-examined in all.

12. That Examiners should only be elected for definite periods, with power of re-appointment.

13. That the Professional Examinations be held by the several Licensing Bodies, except in special cases, at stated periods, to be publicly notified.

14. That returns from the Licensing Bodies in Schedule (A) be made annually, on the 1st of January, and in the subjoined form, to the General Medical Council, stating the number and names of the Candidates who have passed their first as well as their second and third Examinations, and the number of those who have been rejected at the first and second and third Examinations respectively; and that the Registrar forward a sufficient number forms, with a notice for their being returned in due time.

Table of Return of Professional Examinations, and their Results.

Licensing Bodies.	Qualifications.	No. Passed.			No. Rejected.		
		1st Exam.	2d Exam.	3d Exam.	1st Exam.	2d Exam.	3d Exam.

15. That for the future the Licensing Bodies, which do not already do so, distinguish separately in their Returns the names and numbers of Candidates examined, and the numbers of those passed and rejected at the examinations for each of the qualifications conferred.

16. That it is not desirable that any University of the United Kingdom should confer any degree in Medicine or Surgery, whether that of Bachelor, Doctor, or Master, upon Candidates who have not graduated in Arts, or passed all the Examinations required for the Bachelorship in Arts, or the Examinations equivalent to those required for a degree in Arts.

REMARKS ON MEDICAL STUDY.

No one is a Medical Student in the eye of the law until he has been registered as such, and a necessary precursor to registration is the passing a Preliminary Examination. This Preliminary Examination has already been the means of elevating the standard, and giving medical teachers a better class of embryo from which to develop the full-fledged medical man. That it has not done more in this direction is due partly to the negligence of the examiners engaged in the work, and partly to defects in the curriculum imposed. Only those who have to wade through masses of examination papers are aware of the amount of bad spelling and bad grammar which strives to pass current as good English in those ofttimes wonderful productions; while when deficiency in English is so common, we need not wonder at the Latin being still more preposterous. From a pretty large experience of medical teaching and examining, we have no hesitation in saying that it is the exception and not the rule for a medical student of the present day to be able to write a prescription in full in correct Latin; indeed, when recently remonstrating with a student in regard to this, we were told that the examiners of a university, wont to be in the van, had ceased to require a Latin prescription to be written in full, because of the impossibility of getting it correctly done. Yet, not many years ago, the whole of the Examination at this University was conducted in Latin, and the race has not degenerated either in mind or body. The moral is obvious: it is useless to recommend; we must require, we must not appeal to embryo students from love of their chosen profession to prepare themselves more fully and more accurately for entering successfully upon its study. With all but the few who do not require it, such an appeal would be simply quixotic; but we may with more hope of success appeal to the Examiners to see that the requirements of the Medical Council are strictly fulfilled; and when this has been attained, we may then appeal to the Council itself to extend its Preliminary Examination, so as to make it embrace more fully all those subjects necessary to constitute it an adequate preliminary to the more strictly professional subjects of study. It is too much to expect the ingenuous youth of Britain to devote their energies to preparatory studies the influence of which upon their future professional acquirements they can neither perceive nor understand; it is also too much to expect paterfamilias, harassed by his own troubles and ignorant of those which await his son in a profession which he probably knows only in its least important—its mercantile—phase, wisely to direct those early studies which have for their objects the more ready acquirement of professional knowledge, and the ultimate advancement of medical science; and our primary and secondary schools are almost totally deficient in that careful and exact elementary training in the methods of science which forms a necessary preparation for the wise conduct of scientific observation, for entirely a similar reason, viz., the ignorance of the teachers as to the requisite constituents of a true scientific training. Already, however, some of our best schools are widening their basis, and, without diminishing their attention to either ancient or modern languages, are bestowing some upon those branches of study, as botany, zoology, chemistry, etc., which serve to develop the mind more equally and to correct the lopsided tendency produced by too strict an adherence to simply linguistic acquirements. It is to the gradual increase of similar endeavours to train the mind in accurate observation and careful reasoning, both of which may and ought to be taught from earliest youth, that we shall ultimately have a race to whom "The Battle of Dorking" shall be a simple impossibility. For, as Professor Gairdner has said in his recent Lectures on Medical Education, that battle is even now being fought in our workshops, our factories, and our medical schools, and want of scientific training has placed us on the losing side. So far as the medical profession is concerned, much may be done by strictness on the part of the Preliminary Examiners and by an ultimate extension of the subjects of Preliminary Examination, and we may be certain that both students and teachers will rise to the occasion, and neither will be found deficient in the necessary acquirements when these are accurately known and rigidly required. But though this may ensure us a race of students capable of being educated into something more than mere average practitioners, it will not nowadays suffice to place us in the van of medical science. We may become, as we have always in a measure been, first-rate Medical Practititioners—we may make a rational and useful employment of scientific knowledge obtained elsewhere; but we can never originate that knowledge, never become Medical philosophers. Is that a position worthy of the compatriots of Sydenham, Hunter, Whytt, Cullen, and Monro? Certainly not; and yet how can it be otherwise? Our Universities and Infirmaries have neither Pathological, Physiological, nor Chemical laboratories in which to carry on those laborious investigations which, carried on elsewhere and in recent times, have done much to rescue Medicine from that tangled maze of hopeless empiricism in which it seemed destined ever to wander. It is only by careful systematic research in physics and chemistry any advance in Medical Science can now be made; and only those who, g charge of infirmary wards, have sadly seen opportunities for making important advances slip past them for want of the means of getting such systematic researches made, can fully realize the loss to mankind from our supineness in these matters. Edinburgh has now before it a noble opportunity of redeeming its pristine fame, and, amid all the competition going on around, of once more placing itself in the van of Medical Science, in these islands at least. A new Infirmary is about to be erected, on perhaps the noblest site in Europe, and we trust that its promoters will not forget that though the mere care of the sick may be adequately enough provided for by airy wards and careful nursing, their cure is only to be attained by providing efficient means of systematically investigating disease by all the physical and chemical means which modern science has so richly placed at our disposal. It is impossible to over-estimate the importance of such a procedure in a philanthropic point of view; it is equally impossible to foresee the great advances in Medical Science which would thus be rendered possible, or the height of fame to which our Edinburgh Medical School might be carried. We have no want of material, we only want opportunity; and those only who are conversant with the progress made during the last ten years in Continental schools can realize how great that want is, how sadly we have lagged behind in all that is worth striving for, or how earnestly we hope that now, when the opportunity offers, our wishes may be crowned with success, and free scope once more given to our *perfervidus genius*. Failing this, there is no resource but to write over the portico of our world-renowned University the mournful expression of national failure—Ichabod.

In all this it may be said we have forgotten our friends who are about to commence their studies, and the few words of advice it is customary to give them at this time. It is not so. But once a year have we any opportunity of giving vent to our thoughts, and we feel so strongly that, badly put and imperfectly expressed as they may be, if no attention be paid to them, we shall in the future have no students to address, or who will be worth addressing, that it is no wonder if for the moment we have

> "Lost the whole of sense and being
> In the fulness of our love"

for our profession and our noble Medical School. To return to our muttons, however, we may say that the foregoing Regulations of the General Medical Council are so full and explicit that the Medical Student can be at no loss as to what is required of him. It is necessary for him, however, also carefully to study the Regulations of the particular Boards before which he intends to present himself, as, though uniformity of education has of late years made great advances, it is not yet obligatory, and trifling variations unattended to in time, may produce serious consequences at an after period of his career.

On the best method of pursuing Medical Studies, our counsel may be condensed in a few words. Four years are short enough for acquiring the extended information at present required by the Licensing Boards, even as a *minimum*. The Student therefore cannot too soon begin in earnest. During the session, he should lay out a plan of his hours of lectures, practical work, and private study, with sufficient intervals of healthful recreation; and should carry out this plan with unswerving steadiness, ever remembering that steady work, and a habit of looking at all sides of a question or fact, is worth any amount of so-called talent and desultory exertion. During vacation, time may be properly spent in practical work, as assistant to a medical practitioner, or in reading, either to complete past work or in anticipation of the subjects of study for next session. To Students who wish to attain to high honours or position in the profession, we should recommend five years, instead of four, for professional study; or, at all events, they would find great advantage from an acquaintance with Natural History, Natural Philosophy, Chemistry, and Botany, before commencing their strictly Medical studies. This object might be attained by attending classes on these subjects during the summer, previous to the winter session which begins their Medical curriculum.

To all Students we should strongly recommend to join, after their first year, some of the debating societies which are now found in connexion with most medical schools, and of which the Royal Medical Society of Edinburgh, with its spacious rooms and large library, is an excellent example. The mental vigour derived from independent thought and free discussion, and the genial influences of friendship for which these societies afford opportunity, are of great value in the education of the Medical Student, and contribute, in no small degree, to a successful career in after life.

And we would also recommend all, after passing, to obtain an hospital appointment, or at least an assistantship in private practice, so that they may acquire the necessary confidence in themselves, and experience in the ways of the world necessary to ensure success before they are thrown on their own resources.

The following pages contain a tabular abstract of the regulations of the various Licensing Boards, as well as a list of the Hospitals, Dispensaries, etc., attached to our Scotch Medical Schools; also the regulations for the Army, Indian, and Navy Medical Services. The space at our disposal does not allow of more detailed information. But, in point of fact, the regulations of all Licensing Boards now correspond much more closely than they used to do, and the regulations of the General Medical Council afford a key to the general requirements of all of them. For special information, application should always be made to the Secretaries of the Licensing Boards; or, in the case of the Universities, recourse may be had to the published Calendars.

The *Preliminary Examinations* are usually held before the commencement, and at the end, of the Winter Session,—viz., in October, March, or April—sometimes also at the end of the Summer Session. The Professional Examinations in Universities are usually after the Winter and during the Summer Sessions; in Edinburgh, however, the first professional is held in October as well as April. The other Licensing Boards' examinations are held at various periods throughout the year. Special examinations, under circumstances of urgency, can be held at almost any time; but they, of course, entail considerable addition to the expense.

COURSE OF STUDY REQUIRED BY THE VARIOUS BOARDS OF THE UNITED KINGDOM.

	Age.	Anatomy.	Dissections.	Chemistry.	Practical Chemistry.	Materia Medica.	Physiology or Institutes of Medicine.	Surgery.	Practice of Medicine.	Midwifery.	Medical Jurisprudence.	Pathology or Morbid Anatomy.	Botany.	Natural History.	Practical Pharmacy.	Clinical Surgery.	Clinical Medicine.	Hospital Attendance.	Practical Midwifery.	Dispensary or Out-door Practice.	Vaccination.
	Years.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	Mons.	
Edinburgh University, M.B. & C.M.,	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	3 mo., or 6 cas.	6	
University of Glasgow, M.B. & C.M.,	21	6	6	6	3	6	6	6	6	6	3	6	3	3	3	6	6	24	do.	6	
University of Aberdeen, M.B. & C.M.,	21	12	6	6	3	6	6	6	6	6	3		3		3	6	6	24	do.	6	
University of St Andrews, M.D.,	22	12	12	6	3	3	6	6	6	3	3		3	3		6	6	24			
London University, M.B.,	21	6	12	6	1 crs	1 crs	6	6	6	1 crs	1 crs				1 crs	2 yrs.	2 yrs.	4 yrs.	20 cas.	6	
University of Durham, M.B. & M.D.																					
Dublin University, M.B.,		6		6	3 ms	6	6	6	6	6	3		3			9	9	18			
" " Surgical Diploma,		18	18	6	3	6	18	18	6	6	3		3			27	27	27			
The Queen's University of Ireland, M.D.,		12	12	6	3	6	12	6	6	6	3		3	3	3 mos.	12	12	24	3 mo.		
Royal College of Physicians, London,	21	12	12	6	3	3	12	6	12	3	3	6	3		3		9	24	20 cas.		
Royal College of Physicians, Edinburgh,	21	6	6	6	3	3	6	6	6	3	3	3	3		3	3	6	24	6 cases		
King and Queen's Col. of Phys. Ireland,	21	6	12	6	6	6	6	6	6	6	6		6			6	21	27	6 mo.		
Royal College of Surgeons, London,*	21	12	12	6		3	12*	12	6	3					3	27*	9*	33			Cert.
Royal College of Surgeons, Dublin,	21	18	18	6	6	3	18	18	6	3	3					18	9	27			
Royal College of Surgeons, Edinburgh,	21	12	12	6	3	3	3	6 or 12	6	3	3	3			3	6 or 12	6	24	6 cas.	6	Cert.
Faculty of Phys. and Surgeons, Glasgow,	21	12	12	6	3	3	3	6 or 12	6	3	3				3	6 or 12	6	24	6 cas.		
For Double Qualification by Royal College of Phys. and Surg. of Edinburgh,	21	12	12	6	3	3	3	6 or 12	6 or 12	3	3	3	3		3	6 or 12	6 or 12	24	6 cas.	6	Cert.
For Double Qualification by Royal College Phys. Edinburgh, and Faculty of Physicians and Surgeons of Glasgow,	21	12	12	6	3	3	6	6 or 12	6	3	3	3			3	6 or 12	12	24	6 cas.		
Apothecaries' Hall, England,	21	12	6	6	3	3	6		12	3	3	6	3		Appr.		27	27	20 cas.		9 mo.
" Ireland,	21	6	12	6	3	3	6	6	6	6	3		3		Appr.	9	18	27	20 cas.		

English Poor-Law Board.—Candidates for the appointment of Medical Officer are required to be registered under the Medical Act, and must be legally qualified to practise both Medicine and Surgery, in virtue of Diplomas or Licenses granted by competent legal authority in England, Scotland, or Ireland.

Information respecting exceptions to these regulations under various circumstances, and other details as to the order in which, according to some Licensing Bodies, the courses should be taken out, etc., must be obtained by consulting the published Charts of the Colleges, etc. Students should apply to the Secretary to each Board which they intend to pass for a detailed copy of its Regulations.

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* Students from the Schools of Scotland are admitted to examination at the Royal College of Surgeons of England, if they have followed the course of study required by the regulations of the Royal College of Surgeons of Edinburgh. Students in Scotland, therefore, are not required to attend more than one course of Physiology, six months Clinical Surgery, six months Clinical Medicine, and twenty-four months Hospital.

MEDICAL SCHOOLS OF SCOTLAND, 1871-72.

WINTER SESSION.

SUBJECTS.	UNIVERSITY OF EDINBURGH.	SCHOOL OF MEDICINE, EDINBURGH.	UNIVERSITY OF GLASGOW.	ANDERSON'S UNIVERSITY, GLASGOW.	UNIVERSITY OF ABERDEEN.	UNIVERSITY OF ST ANDREWS.
Anatomy, Systematic and Practical, with Demonstrations.	Professor Turner.	Dr Handyside.	Professor A. Thomson.	Dr George Buchanan.	Professor Struthers.	...
Physiology, or Institutes of Medicine.*	Professor Bennett.	Dr Gamgee.	Professor A. Buchanan.	Dr E. Watson.	Professor Ogilvie.	Professor Oswald Bell.
Chemistry, and Practical Chemistry.	Professor C. Brown.	Dr Macadam.	Professor T. Anderson.	Dr Thorpe.	Professor Brazier.	Professor Heddle.
Materia Medica and Therapeutics.	Professor Christison.	In Summer.	Professor Cowan.	Dr Morton.	In Summer.	...
Practice of Medicine.	Professor Laycock.	Dr Haldane.	Professor Gairdner.	Dr M'Call Anderson.	Professor Macrobin.	...
Surgery.	Professor Spence.	Dr Watson.† Dr Jos. Bell. Mr Annandale.	Professor Macleod.	Dr Dunlop.	Professor Pirrie.	...
Midwifery.	Professor Simpson.	Dr J.M. Duncan.	Professor Leishman.	In Summer.	Professor Inglis.	...
Natural Philosophy.	Professor Tait.	Mr Lees.	Professor Sir Wm. Thomson.	Mr Herschel.	Professor Thomson.	Professor Swan.
Natural History.	Professor Allman.	...	Professor Young.	...	Professor Nicol.	Professor Macdonald.
General Pathology.	Professor Sanders.	Dr Wyllie.	...	...	...	...
Clinical Medicine.	Professors Bennett, Laycock, Maclagan, and Sanders.	Drs Haldane,‡ Balfour, G. Stewart, and J.M. Duncan.	The Physicians of the Royal Infirmary.		Drs Harvey, Smith, and Beveridge.	...
Clinical Surgery.	Professor Lister.	Mr Annandale.	The Surgeons of the Royal Infirmary.		Drs Pirrie, Kerr, and Fiddes.	...

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* This course is equivalent to that given under the name of General Anatomy and Physiology in the English Schools. Special schedules are issued by the London Boards for their Scotch students, which should always be inquired for.

† These are not conjoint courses, but separate ones by the gentlemen named.

's is a joint course.

MEDICAL SCHOOLS OF SCOTLAND, 1872.

SUMMER SESSION.

Subjects.	University of Edinburgh.	School of Medicine, Edinburgh.	University of Glasgow.	Anderson's University, Glasgow.	University of Aberdeen.
Practical Anatomy and Demonstrations.	Professor Turner.	Dr Handyside.	Professor A. Thomson.	Dr George Buchanan.	Professor Struthers.
Botany.	Professor Balfour.	...	Professor A. Dickson.	Mr Hennedy.	Professor Dickie.
Materia Medica.	...	Dr Fraser.	...	...	Professor Harvey and Dr Davidson.
Midwifery.	...	Drs Keiller * and Macdonald.	...	Dr Wilson.	...
Medical Jurisprudence.	Professor Maclagan.†	Dr Littlejohn.†	Professor Rainy.†	Dr P. A. Simpson.	Professor Ogston.†
Comparative Anatomy.	Professor Turner.	Dr Handyside.	...	...	Prof. Nicol.
Histology.	Professors Bennett * and Sanders.	Drs Wyllie and Gamgee.	...	...	Professor Struthers.
Practical Chemistry.	Professor Crum Brown.	Dr Macadam.	Professor T. Anderson.	Dr Thorpe.	Prof. Brazier.
Natural Philosophy.	...	Mr Lees.	...	...	...
Natural History.	...	...	Professor Young.	...	Prof. Nicol.
Clinical Medicine.	Professors Bennett, Laycock, Maclagan, and Sanders.	Drs Haldane,‡ Balfour, G. Stewart, and J. M. Duncan.	The Physicians of the Royal Infirmary.		Drs Harvey, Smith, and Beveridge.
Clinical Surgery.	Prof. Lister.	Mr Annandale.	The Surgeons of the Royal Infirmary.		Drs Pirrie, Kerr, and Fiddes.

Operative Surgery is taught during the Summer by Drs Watson, Miller, Chiene, and Mr Annandale. Instruction in Vaccination is also given at the Royal Public Dispensary, Edinburgh, on Wednesdays and Saturdays at 12, by Dr Husband; at the Faculty Hall, Glasgow, on Mondays at 12, by Dr Dunlop; and at the Royal Infirmary, Glasgow, on Mondays and Thursdays at 12 o'clock, by Dr Tannahill.

* These are not conjoint courses, but separate ones by the gentlemen named.

† Drs Rainy and Ogston deliver their courses only in Winter. Dr Littlejohn gives courses during both the Winter and Summer Sessions. Dr Maclagan also lectures during both Summer and Winter. The Winter Course is chiefly intended for law students, but is open to medical students also.

‡ This is a joint course.

⁂ For additional Summer Courses on special subjects, see the Prospectus of each School.

LIST OF HOSPITALS, DISPENSARIES, ETC., IN CONNEXION WITH THE MEDICAL SCHOOLS OF SCOTLAND.

EDINBURGH.

ROYAL INFIRMARY, including LOCK HOSPITAL. Upwards of 560 Beds. Visits daily from 12 till 2 P.M. Physicians—Drs Bennett, Laycock, Maclagan, and Sanders, Professors of Clinical Medicine; Drs D. R. Haldane, G. W. Balfour, and Grainger Stewart, Clinical Lecturers; Dr J. Matthews Duncan (on Diseases of Women). Assistant Physicians—Drs Claud Muirhead and T. R. Fraser. Pathologist, Dr Pettigrew.

Surgeons—Mr Lister, Professor of Clinical Surgery; Professor Spence; Dr Gillespie; Dr P. H. Watson; and Mr Annandale, Clinical Lecturer. Assistant Surgeons, Drs J. Bell and J. Duncan. Consulting Surgeon, Dr Dunsmure. Ophthalmic Surgeons, Mr Walker and Dr Argyll Robertson. Dental Surgeon, Dr John Smith.

CONVALESCENT HOUSE, Corstorphine. Visiting Medical Officer, Dr Bell.

CHALMERS HOSPITAL FOR THE SICK AND HURT. 24 Beds for medical and surgical patients. Physician, Dr Halliday Douglas; Surgeon, Dr P. H. Watson.

ROYAL MATERNITY HOSPITAL. 36 Beds; 245 in-patients and 336 out-patients annually. Consulting Physician, Dr Moir. Physicians, Drs Keiller, C. Bell, Ziegler, Matthews Duncan, and Professor Simpson. Consulting Surgeon, Dr Dunsmure.

ROYAL HOSPITAL FOR SICK CHILDREN. 60 Beds; average number of out-patients, about 5600. Consulting Physicians, Professor Christison, Dr C. Wilson, and Dr Graham Weir. Consulting Surgeon, Professor Spence. Physicians, Drs Stephenson, R. Peel Ritchie, J. Linton, and A. Gamgee. Extra Physicians, Drs Millar and Brakenridge. Surgeon-Dentist, Dr Smith.

ROYAL PUBLIC DISPENSARY AND VACCINE INSTITUTION. About 12,700 patients annually. Medical Officers, Drs Ritchie, Stephenson, Cairns, Spence, Linton, G. W. Balfour, Sanders, Husband, D. Wilson, Millar, Smart, and Andrew. Physicians-Accoucheurs—Drs Keiller, Matthews Duncan, Stephenson, and Cairns. Superintendent of Vaccination, Dr Husband. Medical Secretary, Dr Millar. Clinique daily at 2 P.M. Vaccination on Wednesdays and Saturdays at 12 noon. Apothecary, Mr R. Urquhart.

NEW TOWN DISPENSARY. About 9000 patients annually. Medical Officers,—Drs Dycer, Joseph Bell, A. Dickson, Chiene, Cunynghame, Brakenridge, Affleck, and Cadell. Physicians-Accoucheurs, Drs Dumbreck, Weir, and Angus Macdonald. Superintendent of Vaccination, Dr Affleck. Medical Secretary, Dr Joseph Bell. Clinique daily at 2 P.M. Vaccination on Tuesdays and Fridays from 12 to 1.

DISPENSARY FOR SKIN DISEASES, 4 Melbourne Place (George IV. Bridge). Open on Mondays and Thursdays from 2 till 3 o'clock. Surgeon, Mr G. Stevenson Smith.

ROYAL ASYLUM FOR THE INSANE. About 660 patients. Physician, Dr Skae. Lectures and Clinical Visits in summer.

EYE INFIRMARY, 6 Cambridge Street, Lothian Road. Surgeons, Benjamin Bell, Esq., F.R.C.S., and Dr Joseph Bell, F.R.C.S. Open daily at 1 P.M. Average number of patients annually, 900.

EYE DISPENSARY, Cockburn Street. About 2000 patients annually. Surgeons, Mr Walker, Dr Wilson, and Dr Argyll Robertson. Open Mondays, Wednesdays, and Fridays, at 1 P.M. Clinical instruction during the summer session.

EAR DISPENSARY, 54 Cockburn Street. Drs T. Keith and Jackson. Tuesdays at 12. Average, about 20 cases daily.

DENTAL DISPENSARY, Cockburn Street. Consulting Surgeon, Professor Spence. Consulting Physician, Dr Sanders. Dental Surgeons, Dr Orphoot, Mr Hutchins, Dr Roberts, Dr Hogue, Mr Knox Chisholm, Mr Swanson. Assistant Dental Surgeon, Mr Chisholm, jun. Daily, 9 to 10 A.M. Average number of patients, 4000 per annum.

GLASGOW.

ROYAL INFIRMARY. 550 Beds. Visits daily at 9 A.M. Physicians, Drs W. T. Gairdner, Steven, Perry, M'Laren, M'Call Anderson, and Scott Orr. Physicians to out-patients, Drs P. A. Simpson, Lindsay, Charteris, and Wood Smith.

Surgeons, Drs E. Watson, Dewar, G. H. B. Macleod, George Buchanan, and Morton. To out-patients, Drs Dunlop, Patterson, R. Watson, Smart, and Cameron. Pathologist, Dr Joseph Coats. Superintendent, Dr M. Thomas.

LOCK HOSPITAL. 81 Beds. Medical Officers, Drs G. H. B. Macleod and James Dunlop. In-patients, 520.

LYING-IN HOSPITAL AND DISPENSARY. 24 Beds; in-patients, 360; out-patients, 400. Physicians-Accoucheurs, Drs J. G. Wilson and R. D. Tannahill. Consulting Physician (vacant). Consulting Surgeon, Dr George Buchanan. Dispensary Physicians, Drs John Burns, R. T. Paton, G. Miller, and H. Millar.

UNIVERSITY LYING-IN HOSPITAL AND DISPENSARY. In-patients, about 750; out-patients, about 4000. Physicians, Drs Leishman and John Wilson.

ROYAL ASYLUM FOR THE INSANE. About 680 patients. Physician-Superintendent, Dr A. Macintosh.

EYE INFIRMARY. 24 Beds; 132 in-patients; 3139 out-patients annually. Physician, Harry Rainy, M.D. Surgeons, William Brown, M.D., Thomas Reid, M.D. Assistant-Surgeons, Matthew Charteris, M.D., R. Watson, M.D. House Surgeon, Archibald Neilson, L.F.P.S.G. and R.C.P.E.

EAR DISPENSARY. About 400 patients annually. Surgeon, Dr Dewar. Open on Tuesdays, Thursdays, and Saturdays, at 3 P.M.

DISPENSARY FOR SKIN DISEASES. About 1400 patients. Physician, Dr M'Call Anderson. Practical Courses in Diseases of the Skin and Ear, during May, June, and July. The Dispensary is open on Mondays and Wednesdays at 4 P.M., and on Tuesdays for Diseases of the Ear at the same hour.

OPHTHALMIC INSTITUTION. Consulting Physician, Dr Charles Ritchie. Surgeon, Professor Macleod. Physician, Dr J. Adams. Acting Surgeon, Dr J. N. Wolfe. Open daily from 1 to 3 P.M. A Course of Lectures and Clinical Instruction during the winter and summer months.

ABERDEEN.

ROYAL INFIRMARY. Upwards of 300 Beds. Visits daily at 12 o'clock. Physicians, Drs Harvey, Smith, and Beveridge.

Surgeons, Drs Kerr, Pirrie, Fiddes, and A. Ogston. Ophthalmic Surgeon, Dr Davidson. Pathologist, Dr Rodger. Dental Surgeon, Mr Williamson.

GENERAL DISPENSARY, LYING-IN AND VACCINE INSTITUTION. 7000 patients annually. Medical Officers, Drs Angus Fraser, Duncan, and Brown; Messrs Smith, Paterson, and Fraser. Physician-Accoucheur, Dr Inglis. Dental Surgeon, Mr De Lessert. Visits daily at 9.30 A.M. Vaccination every Wednesday at 3 P.M.

LUNATIC ASYLUM. Above 300 patients. Consulting Physician, Dr Macrobin. Resident Physician, Dr Robert Jamieson.

EYE INSTITUTION, General Dispensary Buildings, Guestrow. Surgeon, Dr Davidson. Open daily, except Sunday, at 2.30 P.M. Clinical Instruction on Diseases of the Eye, and the use of the Ophthalmoscope. Average, 600 patients annually.

ARMY MEDICAL DEPARTMENT.

6 WHITEHALL YARD, S.W.

QUALIFICATIONS AND EXAMINATION OF CANDIDATES FOR COMMISSIONS IN THE ARMY MEDICAL SERVICE.

1. Every candidate desirous of presenting himself for admission to the Army Medical Service must be unmarried, and not under 21 nor over 28 years of age. He must produce a Certificate from the District Registrar, in which the date of birth is stated; or, if this cannot be obtained, an affidavit from one of the parents or other near relative, who can attest the date of birth, will be accepted. He must also produce certificates of moral character, one of them from the parochial minister, if possible.

2. The candidate must make a declaration that he labours under no mental or constitutional disease, nor any imperfection or disability that can interfere with the most efficient discharge of the duties of a medical officer in any climate.[1] He must also attest his readiness to engage for general service, and to proceed on foreign service when required to do so.

3. The candidate must be registered under the Medical Act of 1858 as licensed to practise Medicine and Surgery in Great Britain or Ireland.

4. Certificates of registration, character, and age must be lodged at the Army Medical Department at least one week before the candidate appears for examination.

5. Candidates will be examined by the Examining Board in the following subjects:—Anatomy and Physiology; Surgery; Medicine, including Therapeutics, the Diseases of Women and Children, Chemistry and Pharmacy, and a practical knowledge of drugs. (The examination in Medicine and Surgery will be in part practical, and will include operations on the dead body, the application of surgical apparatus, and the examination of Medical and Surgical patients at the bedside.) The eligibility of each candidate for the Army Medical Service will be determined by the result of the examinations in these subjects only. Candidates who desire it will be examined in Comparative Anatomy, Zoology, Natural Philosophy, Physical Geography, and Botany, with special reference to Materia Medica, and the number of marks gained in these subjects will be added to the total number of marks obtained in the obligatory part of the Examination by candidates who shall have been found qualified for admission, and whose position on the list of successful competitors will thus be improved in proportion to their knowledge of these branches of science.

6. After passing this examination, every candidate will be required to attend one entire course of practical instruction at the Army Medical School on—(1) Hygiene; (2) Clinical and Military Medicine; (3) Clinical and Military Surgery; (4) Pathology of Diseases and Injuries incident to Military Service.

7. At its conclusion, the candidate will be required to pass an examination on the subjects taught in the School. If he give satisfactory evidence of being qualified for the practical duties of an Army Medical Officer, he will be eligible for a commission as assistant-surgeon.

8. During the period of his residence at the Army Medical School each candidate will receive an allowance of 5s. per diem with quarters, or 7s. per diem without quarters, to cover all costs of maintenance; and he will be required to provide himself with uniform (viz., the regulation undress uniform of an assistant-surgeon, but without the sword).

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[1] His physical fitness will be determined by a Board of Medical Officers, who are required to certify that the candidate's vision is sufficiently good to enable him to perform any surgical operation without the aid of glasses. A moderate degree of myopia would not be considered a disqualification, provided it did not necessitate the use of glasses during the performance of operations, and that no organic disease of the eyes existed. Every candidate must also be free from organic disease of other organs, and from constitutional weakness or other disability likely to unfit him for military service in any climate.

9. All candidates will be required to conform to such rules of discipline as the Senate may from time to time enact.

The examinations for admission to the service are held at the London University, Burlington Gardens, on the second Monday in February and August respectively, and on the following days.

EXTRACTS FROM THE ROYAL WARRANT (APRIL 1, 1867) FOR THE PAY AND NON-EFFECTIVE PAY OF MEDICAL OFFICERS.

The daily rates of pay of the officers of the Medical branch of the Hospital Department of our Army shall be as follows:—

Medical Staff.—Daily pay: director-general, special; inspector-general £2, after twenty-five years' service £2, 5s., after thirty years' service £2, 7s., after thirty-five years' service £2, 10s.; deputy inspector-general £1, 10s., after twenty-five years' service £1, 12s., after thirty years' service £1, 15s., after thirty-five years' service £1, 17s.; surgeon-major £1, 4s., after twenty-five years' service £1, 7s.; surgeon 17s. 7d., after fifteen years' service 20s.; assistant-surgeon, on appointment 10s., after five years' service 12s. 6d., after ten years' service 15s., after fifteen years' service 17s. 6d. Charge pay: the officer in medical charge of an army in the field, of 10,000 men and upwards, £1 daily; of 5000 men and upwards, 15s. daily; of less than 5000, 10s. daily. Or, in medical charge of a colony where the number of commissioned officers and enlisted men is 1500 and upwards, 5s. daily.

Apothecaries.—Daily pay: apothecaries 9s., after five years' service 10s. 6d., after ten years' service 12s., after fifteen years' service 13s. 6d., after twenty years' service 15s., after twenty-five years' service 16s. 6d., after thirty years' service 18s.

Assistant-surgeons shall, as a general rule, be promoted to the rank of surgeon in the order of their seniority in the service, unless unfit for the discharge of their duties from physical or professional incompetence or misconduct. In cases of distinguished service, however, an assistant-surgeon may be promoted without reference to seniority; and in such cases, the recommendation detailing the services for which the officer is proposed for promotion shall be published in the general orders of the army, and in the *Gazette* in which such promotion shall appear.

A surgeon, after twenty years' service in any rank, shall be styled surgeon-major, but a surgeon of less than twenty years' full-pay service may be promoted to the rank of surgeon-major for distinguished service. The recommendation detailing the services for which the officer is proposed for promotion for distinguished service shall be published in the general orders of the army, and in the *Gazette* in which such promotion shall appear.

A surgeon must have served ten years in our army, with a commission on full pay, of which period two years must have been passed, with the rank of surgeon, in or with a regiment or depôt battalion, before he can be promoted to the rank of deputy inspector-general of hospitals.

All promotion from the rank of surgeon or surgeon-major to that of deputy-inspector, and from the rank of deputy-inspector to that of inspector, shall be given by selection for ability and merit, the selection being made from the whole rank of surgeons, whether styled surgeons or surgeons-major; and the grounds of such selection shall be stated to us in writing, and recorded in the office of our Commander-in-Chief.

A deputy inspector-general of hospitals must have served five years at home, or three abroad, in that rank, before he can be promoted to the rank of inspector-general.

Our Secretary of State for War, in cases of emergency, may shorten the several periods of service above mentioned, as he shall deem expedient for the good of our service.

Good Service Pensions shall be awarded to the most meritorious medical officers of our army, under such regulations as shall be from time to time determined by us, with the advice of our Secretary of State for War. Six of the most meritorious medical officers of our army shall be named our honorary physicians, and six our honorary surgeons.

Medical officers shall have the right to retire on half-pay after 20 years' service; medical officers of the rank of surgeon-major, surgeon, or assistant-surgeon, shall be placed on the retired list at the age of 55, and all inspectors-general and deputy inspectors-general at the age of 65 years.

Our Secretary of State for War may, when he shall deem it fit, employ officers of the medical branch of our hospital department in sundry situations, at such daily rates of pay, in addition to half-pay, as he shall from time to time determine.

A medical officer who, having voluntarily resigned his commission, has subsequently been permitted to re-enter the army, shall not, except under very special circumstances to be approved by our Secretary of State for War, be allowed to reckon his former service.

An apothecary shall have the right to retire on half-pay after 30 years' good service.

Non-effective Pay.—A medical officer placed on half-pay by reduction of establishment, or on the report of a medical board in consequence of wounds or ill-health caused in and by the discharge of his duties, or on account of age, shall be entitled to half-pay at the following daily rates:—Inspector-general, after thirty years' service, £1, 17s. 6d.; twenty-five years, £1, 13s. 6d.; twenty years, £1, 10s. Deputy inspector-general, after thirty years, £1, 5s. 6d.; twenty-five years, £1, 2s. 6d.; twenty years, £1, 1s. Surgeon-major, after fifteen years, £1; twenty years, 16s. 6d. Surgeon, after fifteen years, 13s. 6d.; ten years, 11s. Assistant-surgeon, after ten years, 10s.; five years, 8s.; under five years, 6s.

The rate of half-pay awarded to officers retiring for their own convenience, after twenty years' service on full-pay, shall not exceed one-half of their full-pay at the time of retirement.

ARMY MEDICAL SCHOOL.

ROYAL VICTORIA HOSPITAL, NETLEY.

President of the Senate.—Sir T. Galbraith Logan, K.C.B., M.D., Director-General of the Army Medical Department.

Members of the Senate.—Sir Ranald Martin, C.B., Physician to the Indian Council; Inspector-General G. S. Beatson, M.D., Principal Medical Officer, Royal Victoria Hospital; Deputy-Inspector-General T. Longmore, C.B., Professor of Military Surgery; Deputy-Inspector-General W. C. Maclean, Professor of Military Medicine; William Aitken, M.D., Professor of Pathology; E. A. Parkes, M.D., F.R.S., Professor of Military Hygiene.

Assistant Professors.—Staff-Surgeon-Major W. A. Mackinnon, C.B., Military Surgery; Staff-Surgeon-Major, W. J. Fyffe, M.D., Military Medicine; Staff-Surgeon F. S. B. F. De Chaumont, M.D., Military Hygiene; and Staff-Assistant-Surgeon V. Wearne, Pathology.

Candidates for Commissions in the Army, and in the Queen's Indian Service, proceed to Netley after passing the Examination at London. At Netley they attend the Medical and Surgical Practice of the Royal Victoria Hospital, and learn the system and arrangements of Military Hospitals. During four months they attend the lectures given by the Professors and Assistant-Professors, and go through a course of practical instruction in the Hygienic Laboratory and Microscopical Room. The lectures and practical instruction are intended to explain the specialities of Military Medical Practice, attention being directed to gunshot and other wounds, surgical arrangements in the field during action and sieges, means of transport, field hospitals, tropical diseases and their means of investigation, service in India and in the various colonies, the sanitary arrangements in peace and war, and the means of carrying out the sanitary regulations. Every opportunity is taken of practising operations on the dead body, and practical points of a like kind.

INDIAN MEDICAL SERVICE.

INDIA OFFICE, WHITEHALL, S.W.

ALL natural-born subjects of Her Majesty between twenty-two and twenty-eight years of age at the date of the examination, and of sound bodily health, may be candidates for the appointment of assistant-surgeon in Her Majesty's Indian Medical Service.

They must subscribe and send in to the Military Secretary, India Office, Westminster, proofs of their qualification similar to those required by the Army Medical Department.

Degrees, diplomas, licenses, and certificates of their registration in accordance with the Medical Act of 1858, must be lodged at the India Office, for examination and registry, at least one fortnight before the candidate appears for examination. The regulations, subjects, and times for examination are the same as for the Army Medical Department. Passage allowance to India on appointment will be given, or a passage provided. When passages are provided on board the Indian troop-ships, a charge for messing will be made at the rate laid down in the Royal Passage Warrant of 1865. Pay at 10s. a day will be allowed from the date of passing final examination at the Army Medical School.

Indian allowances and time of service for pension will reckon from date of arrival in India. The period of residence at the Army Medical School will reckon as service for the full-pay pension only.

The duties will be those hitherto performed by the medical officers of the East India Company's Service, with the exception of those relating to European troops.

Surgical instruments are provided in India by the Government for the use of medical officers.

When assistant-surgeons have served the requisite time they will be examined in the following manner as a test for promotion:—

A series of printed questions, prepared by the Inspector-General of the Presidency, will be sealed and sent to the principal medical officers of stations where assistant-surgeons may be eligible for examination. It will be the duty of the principal medical officer of the station to deliver these sealed questions to the assistant-surgeons, and to see that they are answered without the assistance of books, notes, or communication with any other person. The answers are to be signed, and delivered sealed to the principal medical officer, who is to send them, unopened, to the Inspector-General of the Presidency, together with a certificate from the surgeon of the regiment, or other superior medical officer, that the assistant-surgeon has availed himself of every opportunity of practising surgical operations on the dead body.[1]

The assistant-surgeon will also be required to transmit, together with his answers to the Inspector-General of the Presidency, a medico-topographical account of the station where he may happen to be at the time, or of some other station where he may have been resident sufficiently long to enable him to collect the necessary information for such a report. Failing this, he will send a medico-statistical report of his regiment for a period of at least twelve months.

If the Inspector-General of the Presidency is satisfied with the replies to the questions, and with the certificates and medico-topographical or statistical report, the assistant-surgeon will be held qualified for promotion.

The assistant-surgeon will thus be subjected to three separate examinations within the first ten years of his service, each examination having a definite object. The first, to ascertain, previous to his admission into the service as a candidate, his scientific and professional education, and to test his acquirements in the various branches of professional knowledge; the second, after having passed through a course of special instruction in the Army Medical School, to test his knowledge of the special duties of an army medical officer; and the third, previous to his promotion, to ascertain that he has kept pace with the progress of medical science.

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[1] The assistant-surgeon may see this certificate before it is sent to the Inspector-General.

The promotion of assistant-surgeons will be regulated by length of service, and not, as heretofore, by succession to vacancies in a fixed establishment of officers of the higher grades.

Assistant-surgeons of twelve years' service from the date of first commission (of which two years shall have been passed in charge of a native regiment), who shall have passed the prescribed examination in professional subjects, will be promoted to the rank of surgeon.

A surgeon, whether on the staff or attached to regiments, must have served ten years in India, of which two must have been passed, with the rank of surgeon, in or with a regiment, or as a civil surgeon, before he will be eligible for promotion to the rank of deputy inspector-general of hospitals.

A deputy inspector-general of hospitals must have served three years in India as such before he shall be eligible for promotion to the rank of inspector general.

In cases, however, of emergency, or when the good of the service renders such alteration desirable, it shall be competent for the Governor-General in Council to shorten the several periods of service above mentioned, in such manner as he shall deem fit and expedient.

With a view to maintain the efficiency of the service, all medical officers below the rank of deputy inspector-general of hospitals shall be placed on the retired list when they shall have attained the age of fifty-five years, and all inspectors-general and deputy inspectors-general when they shall have attained the age of sixty-five years.

With a view of promoting the efficiency of the service, it has been further determined that the tenure of office by a deputy inspector-general shall, as in the case of inspectors-general, be limited to five years; officers being, however, if not disqualified by age, eligible either for employment for a second tour of duty in the same grade, or for employment in the higher grade of inspector-general by promotion thereto.

The rank of inspector-general and deputy inspector-general conferred upon officers of the Indian Medical Service under the royal warrant of 13th January 1860 is to be considered as substantive rank.

These officers, on vacating office at the expiration of the five years' tour of duty, will be permitted in future to draw respectively an unemployed salary of 1200 rupees per mensem in the former, and 900 rupees in the latter case, for a period of six months from the date of their vacating office, after which they will be placed while unemployed on the rate of pay laid down for officers of corresponding rank in Europe. These sums, deducted from the consolidated salary, will regulate the moiety of staff salary to be drawn by officers of those grades during absence on sick certificate.

NAVY MEDICAL DEPARTMENT.

Admiralty Office, Somerset House, London, W.C.

REGULATIONS RELATIVE TO THE EXAMINATION OF CANDIDATES FOR THE APPOINTMENT OF ASSISTANT-SURGEON IN THE ROYAL NAVY.

1. That a candidate for entry into the Royal Navy shall make a written application to that effect, addressed to the Secretary of the Admiralty, on the receipt of which application he will be furnished with the regulations, and a printed form, to be filled up by him, to show if he possesses the required qualification.

2. As vacancies occur, the number of candidates required will be ordered to attend for competitive examination at the Admiralty Office; but it is to be observed, that no person can be admitted as an assistant-surgeon in the Royal Navy unless he can produce satisfactory evidence that his name has been placed on the Medical Register as legally qualified to practise both Medicine and Surgery according to the Regulations established by the Medical Act. And further, he will be required to make a declaration that he is free from any

mental or bodily disease, defect, or infirmity, which could interfere with the efficient discharge of his duties as a medical officer in the Navy.[1]

3. Each candidate will be required to produce a certificate of good moral character, signed by the clergyman of the parish, or by the magistrate of the district, or by a legally qualified physician or surgeon.

4. A certificate that he is not less than twenty nor more than twenty-eight years of age.

5. That he has received a preliminary classical education.

6. That subsequently to the age of eighteen he has actually attended a recognised hospital for eighteen months, in which the average number of patients is not less than one hundred.

7. That he has been engaged in actual dissection for twelve months, and that he has performed the principal capital and minor operations on the dead body under a qualified teacher. The certificates of Practical Anatomy must state the number of subjects or parts dissected by the candidate.

8. On producing the above certificates, he will be examined on the following subjects, viz.:—Anatomy, Surgery, Physiology or Institutes of Medicine, Practice of Medicine, Chemistry, Materia Medica, Midwifery, Botany.

9. Although the above are the only qualifications which are absolutely required in candidates for the appointment of assistant-surgeon, a favourable consideration will be given to those who are acquainted with the collateral sciences more immediately connected with the profession, such as Natural History, Natural Philosophy, and the use of the microscope in diagnosis.

10. Such candidates as shall have been found in all respects competent for the appointment of assistant-surgeon will be forthwith nominated to one of Her Majesty's Ships, or to a Naval Hospital at home; or, should their services not be immediately required, their names will be duly registered for early appointments as vacancies may occur. But it is distinctly to be observed, that candidates admitted into the Naval Medical Service must serve in any ship to which they may be appointed; and that in the event of their being unable to do so from sea-sickness, their names cannot be continued on the Naval Medical List, nor can they, of course, be allowed half-pay.

11. By the rules of the service no assistant-surgeon can be promoted to the rank of surgeon until he shall have served five years, two of which must have been in a ship actually employed at sea, after which he will be required to pass an examination before a Board of Naval Medical Officers, assembled at the department of the Medical Director-General of the Navy.

12. After completing three years' full pay service, assistant-surgeons will be allowed to be examined for the rank of surgeon, but no assistant-surgeon can be promoted to the rank of surgeon until he shall have served five years, two of which must have been in a ship actually employed at sea.

13. A limited number of those candidates who pass the best examination on entering the service shall be promoted annually to the rank of surgeon at an earlier period than would occur under ordinary circumstances; and these promotions shall be awarded as follows:—The candidate who passes the best examination of his year—after five years' service. The candidate who passes the second best examination of his year—after six years' service. The candidate who passes the third best examination of his year—after seven years' service. Provided, however, that their second examinations are passed in an equally creditable manner, and that their conduct during the whole time they have been in the service has in all respects been satisfactory.

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[1] His physical fitness will be determined by a Board of Medical Officers, who will be required to certify that his vision is sufficiently good to enable him to perform any surgical operation without the aid of glasses, and that he is free from organic disease, constitutional weakness, or other disability likely to unfit him for naval service in any climate.

Part Third.

PERISCOPE.

ERGOTINE AS A HÆMOSTATIC.—The *Bulletin Général de Thérapeutique* quotes from the *British Medical Journal* a case of Dr Jamieson, of Berwick, in which the subcutaneous injection of ergotine proved successful in arresting pulmonary hæmorrhage on three separate occasions in a man aged forty-one. The *Bulletin Général*, following Dr Jamieson, ascribes the first idea of this excellent mode of employing ergotine as a hæmostatic to Dr G. W. Balfour. The proposal, however, came originally from Langenbeck, of Berlin. Whenever the hæmorrhage is of such a nature that it can be arrested by simple contraction of the smaller arteries, good ergotine is, when thus employed, sure to be successful; and as the subcutaneous injection into the arm, or some fleshy part, is productive of not the slightest inconvenience, it is always worthy of trial. Three to six grains are sufficient for one injection, and it may be repeated within three minutes if necessary; the action is almost instantaneous. A prepared solution may be kept in readiness with a small proportion of spirit or glycerine to preserve it.

GENERAL NEURALGIA.—M. Gallard has found that the only remedy capable of successfully combating the general neuralgia of Valleix is the actual cautery lightly applied at a white heat along the course of all the nerves affected. Coupled with a tonic regimen he thus cured two cases—one in eight days, and the other in three weeks, after all other means had failed.—*Journ. de Méd. et de Chir. prat.*, July 1870, and *Bulletin Général de Thérap.*, August 1871.

CHLORIDE OF SODIUM.—As a succedaneum for quinine, Dr Pioch has found the chloride of sodium extremely useful in curing African intermittents. Given by itself, it was occasionally perfectly successful. In some cases a slight return was perceived for three or four days, which yielded, however, to a continuance of the treatment in a few—three or four—days. Others who thought themselves cured after two doses had a less obstinate relapse about eight days afterwards. In a few the attack changed its hour of return, and became gradually feebler before finally disappearing. Those who combined the saline treatment with quinine were rapidly cured, even a grain or two of quinine proving sufficient for this, especially if the quinine were administered seven hours before the access, and the salt one or two hours after the commencement of sweating. The dose of salt is ten grammes (154 grs.) given in half a wineglassful of water. More water causes the salt to purge, and deprives it of its antiperiodic power. Dr P. thinks that the salt acts best in large crystals, and when not pulverized previously. Any coexisting gastric disorder, with or without diarrhœa, must be first removed by a purge. Two doses of ten grammes of the chloride of sodium must be given every day till the desired effect is produced; the first, seven or eight hours previous to the expected access, the second immediately after the pyrexia, if that has not been prevented. Such doses may be continued for three or four days without any physiological inconvenience.—*Lyon Medical*, 1870, and *Bulletin de Thérapeutique*, August 1871.

HYDRATE OF CHLORAL IN INSANITY.—In his last Report of the Royal Glasgow Asylum, Dr Mackintosh makes the following remarks on the hydrate of chloral: "In my last report I alluded to the new drug chloral hydrate, and as we have since used it to a great extent here, I think it proper to state the results of our experience. It has been given principally in the form of syrup, in doses varying from ten to forty grains, rarely exceeding eighty grains, in the course of twenty-four hours. In general, it induces sleep for several hours continuously, and this, too, although taken for a length of time. The patients capable of giving correct answers state that its effects are most soothing and agreeable to their feelings. Some of them are very fond of it; but a common complaint among the melancholics is, that when it does not cause sleep it slightly intoxicates them. In many instances, especially in acute mania, it has completely failed, and markedly so in cases of recurrent mania, where, however, we should add, no kind of medicine seems to abate or arrest the progress of the paroxysm. In the case of some patients it has a tendency to relax the bowels, and never constipates them; it very seldom causes nausea or headache, and the tongue is not found to be dry, as it is after the use of morphia and other sedatives. We must say that we have proved it to be a valuable medicine in cases of insanity and delirium tremens; no bad symptom has been caused by its administration in our practice, and it is more harmless and safe than any other hypnotic known to us."

A NEW TEST FOR HYSTERIA.—A French work just issued by Dr Chairon, Chief Medical Officer to the Vesinet Asylum, entitled "Clinical Studies on Hysteria," announces the discovery by him of a new pathognomonic sign of hysteria, which, should it be confirmed by experience, will prove to be a valuable contribution to medicine. Since Dr Chairon has become connected with this Institution, he has passed under view 26,000 female patients, amongst whom were a great many cases of hysteria. He says that he has ascertained that in every one of them the commencement of the affection has been marked by a special sign—insensibility of the epiglottis. The determination of this system, which is constantly present, is very simple. It is sufficient to introduce gently the finger into the mouth, so as not to frighten the patient, and place it on the base of the tongue. It will be found that the epiglottis may be touched, displaced, and scratched with the nail without producing the least regurgitation. When this symptom exists there will be found invariably a congestion of one or both ovaries, usually of the left. Singular as this proposition is, the author proceeds to prove its exactitude, and has, with that object, quoted a great number of cases collected at Vesinet.—*Philadelphia Med. and Surg. Rep.*, July 29.

DIPHTHERIA OF THE THROAT.—Dr A. Classen, of Rostock, considers (*Virchow's Archiv*, Feb. 1871) that diphtheria is primarily a local disease, and that it depends on a fungus which penetrates into the epithelial cells of the mucous membrane. The result of this penetration of the epithelial cells by the fungus is a greatly increased growth of epithelium, so that layers on layers of such cells are produced, and, at the same time, white and red blood-corpuscles pass from the vessels and mix with the diseased part. The exudation in diphtheria he considers to be composed chiefly of the changed epithelial cells and blood and pus corpuscles. The fungus he has detected in the very substance of the epithelial cells, and, as it is extremely minute, he supposes that it passes from the affected membrane into the bloodvessels, and there produces the constitutional symptoms, which are thus secondary to the primary affection of the mucous membrane. The presence of the fungus in the mucous membrane leads to irritation and inflammation of it, and the inflammation has the usual results; and as it is generally severe, it is commonly followed by sloughing of the mucous membrane. The author distinguishes diphtheria from croup on the one hand clinically, but on the other hand more absolutely, on the ground of the presence of this fungus in diphtheria. In the early stages of diphtheria you may have only a false membrane on the surface of the mucous membrane, but this has its origin in the irritation produced by the fungus; whereas in croup there is always a simple inflammation, which is not generally so severe as that which occurs in diphtheria, and the mucous membrane is not generally involved in the exudation. In diphtheria the constitutional disturbance is greater than in croup, this being a natural result from the fungus passing into the blood. The alteration in the constitution of the blood effected by this fungus is considered to produce a tendency to hæmorrhage, and the paralysis which is one of the common results of diphtheria is ascribed to hæmorrhage into the sheaths of the nerves. To the same cause he ascribes the difficulty of hearing and seeing which sometimes ensues, and supposes that when hæmorrhage has occurred a slight inflammation is set up as a consequence, and that the function of the nerve is thus interfered with. A case is described where there was some loss of sight, and ophthalmoscopic examination showed the presence of a slight degree of neuro-retinitis, and this the author ascribes to the inflammation resulting from hæmorrhage into the optic nerve near its origin. In respect to therapeutics, the author, considering the disease to be primarily a local one, and this local affection depending on a foreign organism, looks on the destruction of the latter as the most obvious indication. Practitioners have come, as a rule, to use local applications to cases of diphtheria, without any definite idea as to the disease being fundamentally local. The author has used various local applications, and here gives the result of his experience: Nitrate of silver, in solution or solid, is not advisable, as its action is too superficial; the solution of the perchloride of iron is useful in slight cases; but he considers that the mild acids are the best agents. He has used diluted lactic acid, which he paints on to the part; also citric acid, in the form of lemons, which were sucked in large quantities, sometimes to the number of seventy in the twenty-four hours. The acid he has found most reliable, however, is sulphurous acid, and this he administers in the form of dry powdered sulphur (flowers of sulphur) blown on to the part, or suspended in water and used as a gargle. The grains of sulphur adhere to the mucous membrane, and by their gradual oxidation form a continual store of sulphurous acid. The constitutional treatment was varied according to the cases; in some cases leeches were used; and, where the exudation was extremely extensive, mercury was given in the form of mercurial inunction. Quinia and iron were most useful in convalescence. Latterly, he has given crystallized carbolic acid, with a view to its attacking the fungus in the blood, and he thinks he has seen great benefit derived from its use.—*Glasgow Med. Jour.*, May 1871.

PERFORATION OF THE UTERINE WALLS BY A SOUND.—Dr Alt, in his Gynæcological Clinic (*Centblt. f. d. Medicinisch. Wisschftn.*, 10th Dec. 1870, from *Berliner Klin. Wochenschr.*, No. 42, 1870), describes two cases, occurring in newly-confined women, in which a sound was passed into the uterus far beyond the customary depth—17 to 13 cm. respectively. No hæmorrhage followed in either case, nor any symptoms of peritoneal disease. Dr A. concurs in opinion with Hœnig, that in both the above cases there occurred a perforation by the sound of the walls of the uterus, which can readily take place, without the employment of any objectionable force in the use of the instrument, when the uterus is in an atrophied condition—a common occurrence in the puerperal state. The explanation given by Matthews Duncan and Hildebrand of the character of these cases—namely, that the sound passes into the abdomen through one of the Fallopian tubes—is shown by Dr Hœnig, in his analysis of the cases on record, to be untenable; but more especially is the incorrectness of the opinion proved by the observations reported by Dr E. Martin, in the second edition of his work on *Displacement and Curvatures of the Uterus*. On laying open the abdomen in one of the cases similar to those reported by Dr A., he actually saw that the sound had passed into the abdominal cavity through the wall of the uterus.—*American Jour. of the Med. Sciences*, July 1871.

Part Fourth.

MEDICAL NEWS.

Obituary.—On the 31st of August last, **Henry Hyde Salter**, M.D., F.R.S., died, after a long and lingering illness, which terminated in a suppurating cavity in the apex of his right lung. Dr Salter is well known for his work upon Asthma, his researches on that subject having been stimulated by the fact that he himself had suffered from it from childhood. Dr Salter was also the author of various scattered lectures on clinical medicine, chiefly on the thoracic organs; and he edited the last two volumes of the "Encyclopædia of Anatomy and Physiology," besides contributing to them the articles "Tongue" and "Pancreas," the former of which especially contained many novel anatomical observations; and it is believed that his election as a Fellow of the Royal Society at the early age of thirty-three was mainly due to this paper. Dr Salter has died at the age of forty-seven, affording another sad illustration of the apparent incompatibility of active mental exertion with long life in the metropolitan atmosphere.

The Medical Directory.—The Editors of this most useful publication have requested us to announce that, in the forthcoming edition, the name of no one will be inserted who does not possess a legal qualification capable of being registered. Actual registration is not a necessary condition of insertion in the *Medical Directory*, but the qualifications possessed must be such as the registrars would receive. This is a very commendable resolution, and will prove useful in as far as possible keeping out all illegal practitioners.

Medico-Chirurgical Society of Glasgow.—At the meeting of this Society, held on Friday, 1st September, in the hall of the Faculty of Physicians and Surgeons, the following gentlemen were elected office-bearers for the ensuing session, viz.:—

President.—Dr James Adams.

Vice-Presidents.—Dr James Stewart, Dr George Buchanan.

Council.—Mr Torrance, Airdrie; Dr H. Thomson, Dr James Gray, Mr Robert Grieve, Mr J. Pollock, Mearns; Dr R. Renfrew, Dr George Miller, Dr T. D. Buchanan.

Secretaries.—Dr Robert Perry, Dr Alex. Robertson.

Treasurer.—Dr H. R. Howatt.

Cholera still prevails to a considerable extent in the east of Prussia, and is even said to be intruding southwards into Turkey.

Hartlepool seems to be the port most menaced in Britain, as already there have been two seamen ill of cholera landed there, one from the *Uhlenherst*, and the other from the *Alster*, both steamers from Hamburg. We see nothing in the characteristics of the season, or the signs of the times, to induce us to believe in an impending epidemic of cholera, and we trust nothing of the kind will happen; for, difficult as it has always been to get cholera patients properly attended to, it would be ten times worse after all this fuss about quarantine. Considering the filthy condition of our towns, with all its ills, quarantine is perhaps a necessary evil; but it would certainly be a loss to mankind were quarantine alone always to be successful in keeping out such preventible diseases. Our duty is clearly to watch the seaboard, but also to set our own house in order, and, by promoting the sanitary condition of our people and our towns, to defy the cholera, just as we have for long defied the plague, which has not ceased to exist, though it now never comes hither.

DIPHTHERIA has again proved fatal in fourteen cases in Edinburgh during August, mostly in the well-to-do districts. Glasgow and Edinburgh, the two towns best drained and best supplied with water, have this month proved the most prolific of diphtheria, pre-eminently, as we believe, a foul-air disease. Clearly, good drainage and ample water-supply are not panaceas for the prevention of such diseases. Surely our indefatigable Health Officer ought to have something to say of this. Eighty deaths from diphtheria in five months is surely a heavy item for a preventible disease.

PRESENTATION TO DR PAXTON.—On the 30th ult. a deputation from the people employed at Caprington Works waited upon the above-named gentleman and presented him with a massive silver salver in recognition of his long and valuable services as their medical officer. The salver, which is of solid silver, and of the most chaste and elegant design and beautiful workmanship, bears the following inscription:—"Presented to John Paxton, M.D., Kilmarnock, by the employées at Caprington Works, on the occasion of his retiring as their medical officer, after a faithful professional attendance of thirty-five years. Caprington, 1871." We understand that a recent severe illness, from which the doctor has not even yet fully recovered, compelled him to sever the tie which had so long and agreeably existed between the Caprington workers and himself. But this token of regard with which they presented him so gracefully and spontaneously will be an abiding evidence to him how far they appreciated his anxiety and desire to discharge his onerous duties towards them faithfully and well.—*Kilmarnock Standard*, Sept. 2.

THE BEST METHOD OF PRESERVING EGGS is to coat them with collodion.

APPOINTMENT.—We are glad to learn that Dr H. Alleyne Nicholson, formerly Lecturer on Natural History in the Medical School of Edinburgh, has been appointed to the Chair of Natural History in the University of Toronto.

THE BEST METHOD OF DESTROYING BUGS is to wash the woodwork infected by these vermin with a solution of carbolic acid in water of the strength of five parts of the acid to one hundred of water. The insects are at once killed by the solution, which also acts as a disinfectant.—*Révue de Thérapeutique Médico-Chirurgicale*, 1st August 1871.

LIST OF GENTLEMEN who competed successfully for appointments as Assistant-Surgeons in her Majesty's British Medical Service at the Competitive Examination held at the London University on the 9th August 1871.

Order of Merit.	*Name.*	*Marks.*
1.	Cottle, E. W.	2060
2.	Connolly, P. S.	2055
3.	Dwyer, C. E.	2020
4.	Blood, R.	1970
5.	Fasken, W. A. D.	1959
6.	Edge, J. D.	1890
7.	Drury, R.	1885
8.	Bridges, W. P.	1875
9.	Rogers, J. G.	1865
10.	Ash, R. V.	1825
11.	Grant, W. C.	1782
12.	Connolly, B. B.	1720
13.	Barrow, H. J. W.	1665
14.	Barrow, F. E.	1654

PUBLICATIONS RECEIVED.

William Adams, F.R.C.S.,—New Operation for Bony Anchylosis of the Hip-Joint. London, 1871.

M.A.B.,—Some Simple Sanitary Precautions against Cholera and Diarrhœa. London, 1871.

Samuel C. Busey, M.D.,—Artificial Induction of Labour in Uræmia. Washington, 1871.

Robert H. Collyer, M.D.,—Mysteries of the Vital Element. London, 1871.

John Dougall, M.D.,—On the Relative Powers of Various Substances in preventing the Germination of Animalculæ. London, 1871.

Richard J. Dunglison, M.D.,—The Public Medical Libraries of Philadelphia. Philadelphia, 1871.

Robert Fowler, M.D.,—Complete History of the Welsh Fasting-Girl. London, 1871.

Henry Freke, M.D.,—The Dependence of Life on Decomposition. Dublin, 1871.

Joseph C. Hutchison, M.D.,—Treatise on Physiology and Hygiene. New York, 1871.

J. Macbeth, D.I.G.,—Experiments on the Effects of Reptile Venom. Lucknow, 1871.

Nicholas Morgan,—Phrenology, and how to use it. London, 1871.

Prof. Filippo Pacini,—Sull' Ultimo Stado del Colera Asiatico. Florence, 1871.

David Prince, M.D.,—Plastics and Orthopedics. Jacksonville, Ill., 1871.

J. Russell Reynolds, M.D.,—A System of Medicine, vol. iii. London, 1871.

Dr Louis Stromeyer,—Notizen und Erinnerungen eins Ambulanz-Chirurgen von William Mac Cormac. Hanover, 1871.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*The Restoration of the Perineum.* By J. MATTHEWS DUNCAN, M.D.

THE operation which I now propose to describe has received various names. That which I use, and which forms the title to this paper, is open to some objections—and yet, I prefer it because it indicates the chief object of the proceeding. The perineum may be restored in order that it may aid in closing the vagina, and prevent, or assist in preventing, the procidence of the womb, or of other pelvic organs. The perineum may be restored because its restoration implies the reconstruction of the anus, and restoration of the function of the sphincter ani. But the name is not in every sense apt, for in many cases the operation is performed on an anatomically entire perineum. When procidentia occurs in a virgin, for example, and demands this operation, as it occasionally does, then the surgical interference has not for its object the anatomical restoration of the perineum, but the formation of a new, adventitious, or supplementary perineum, in addition to, or continuation of, the old or present one, whose mechanical function of closing the lower part of the vagina has been impaired or lost, or at any rate requires to be improved or added to. The restoration of the perineum may imply, then, not merely what the name sufficiently indicates, but the formation of new perineum in addition to what may be present, whether that is partly damaged anatomically or entirely uninjured anatomically.

When the perineum is ruptured in the course of the second stage of labour, or otherwise, as in the analogous extraction of a large fibrous tumour of the womb, almost no evil is thereby entailed on the woman if she is in other respects healthy, unless the injury reaches the sphincter ani.

If the laceration goes no farther than to reach the anal opening, the woman may suffer little inconvenience from it. But she is always liable to inconvenience, and perhaps also to disease. The lower or external part of the sphincter is divided, and the function of the whole muscle is imperfectly performed. This imperfection may not be felt if the alvine dejections are of considerable or ordinary consistence, and if there is no flatus in the rectum. But if there be flatulence, it may be discharged on untimely occasions; and noise, or fetor, or both, may accompany the discharge, and be extremely offensive. If there is diarrhœa, or if there is merely a loose condition of the bowels, then the stool may pass without the patient's knowledge; or, if not without her knowledge, without her being able even for a minute to impede its expulsion. This condition of incomplete destruction of the sphincter is not uncommon, and many women, even women of refinement, endure its evils rather than submit to the operation for its cure. The same condition is occasionally observed in cases of lupus of the vulva, the destruction of the sphincter being the result of intractable ulceration. I have seen, in a case of lupus, this condition simulated functionally, while anatomically the whole sphincter, and almost the whole posterior wall of the vagina and adjacent rectum, were destroyed and removed. In this case, the new anus, lying behind the cervix uteri, and opening into a great recto-vaginal cloaca, had, instead of a sphincter, a hard cicatricial stricture, which allowed only a finger to permeate it, and which acted nearly as well as the sphincter ani when incompletely destroyed by laceration in the second stage of parturition.

The imperfect action of the sphincter ani, entailing the evils we have just been describing, is sometimes observed even when the muscle is entire, as in men. It may be a temporary weakness, or an early stage of the more complete paralysis of the sphincter.

Women suffering from injury of the sphincter ani, I am inclined to think specially liable to a peculiar form of diarrhœa. At least, I have observed the occurrence of a peculiar, chronic, slight looseness of the bowels in such women so often as to lead me to believe in some obscure connexion between the two conditions. At the same time, I cannot but remark an evident source of danger of error so long as there are no statistical data to confirm or overthrow the opinion: this source of danger, or the false appearance of extraordinary frequency of this diarrhœa, may arise from the extraordinary annoyance which it produces in women with imperfect sphincters, and the consequent extraordinary impulse to call for medical or surgical relief. The disease to which I have been alluding causes much dull griping pain, coming on generally after taking food, and most frequently after breakfast, and followed by frequent evacuations, the dejecta being nearly watery in consistence. It is not amenable to any treatment by drugs, except for a time. Brandy, strychnine, iron, and bael, are the remedies which I have found to be of at least temporary utility. I have not observed disorder of the stomach, or derangement of nutrition, to result, even from a long continuance of the disorder.

When the whole sphincter is destroyed, and there is no compensating stricture of the rectum at its opening into or union with the vagina, the woman's condition is always truly pitiful. The patient has not only no power of retaining the fæces, whether solid or fluid—she is not even aware of their coming to pass till her person and clothing are disgustingly soiled. She has no chance of ease or comfort, even temporarily, except from a successful operation for the restoration of the perineum.

In cases of procidentia of the bladder, of the uterus, of the posterior wall of the vagina, of the rectum, of several or of all of these parts, the perineum may be anatomically entire, the hymen may be easily traced without a laceration; or there may be more or less complete anatomical destruction of it, laceration having proceeded to various degrees, backwards from the fourchette towards the anus, or even into the recto-vaginal septum. This line of parts is most, though not exclusively, liable to laceration during parturition, for two reasons: first, because it is the line of greatest thinness of structure, and of greatest weakness; second, because, holding the position of the concavity of the curved tube through which the head is pushed, it is, in accordance with physical law, the part most subjected to dangerous pressure by the efficient powers of parturition. In cases where I have observed the hymen unruptured it has been pale and thick, and has probably owed its entire condition to the gradualness of the distention to which it has been subjected.

In cases of procidentia, whether the perineum be anatomically entire or not, it is always functionally imperfect. It does not prevent the passage of the procident organ or organs over it and through the vaginal orifice, as it might do. It is gradually distended, the vaginal orifice is dilated, the perineum or its remnant is pushed backwards, and its antero-posterior length is more or less completely annihilated. In this way, cases which begin with an entire perineum are at length brought, not anatomically, but functionally, into the same condition as those in which the perineum was previously extensively ruptured. When the procident parts are pushed back, and the perineal region is exposed, there is found a very unnatural condition of parts. Instead of the labia majora being in contact, or nearly so, there is seen a large rounded gaping vaginal orifice, generally closed by the rugous anterior vaginal wall, and extending from the clitoris in front to the narrow transverse strip of perineum behind. This condition cannot but cause symptoms, and accordingly the woman describes a feeling of disagreeable openness. This gaping orifice the surgeon closes by restoring the perineum, making a new and long perineum anatomically, with the hope that it will efficiently assume the function of closing this orifice, so as to prevent the return of the procidentia. After the operation is finished, and again after the cure is complete, the surgeon finds, when he exposes the perineal region, a quite different appearance. There is now no gaping orifice; no mucous membrane is visible; the labia majora are in contact—indeed they are extensively united.

The operation which I now propose to describe is very generally successful. Success, indeed, may be counted upon. It is rarely that a second operation is required. I have operated on cases for the second time, but not in any case which was from the first under my own care. Previous failure does not prevent future success.

When the operation is performed for injury of the sphincter, the woman feels her renewed power to restrain flatus and fæces however liquid. This renewed power is not in every case complete; for it occasionally happens, that although there is great improvement, and consciousness of regained sphincteric power, yet the recovery is not quite perfect; the control over feculent and flatulent evacuation is not in its pristine perfection.

When the operation is performed for the cure of procidentia, the cure is complete or the failure is complete. This does not imply that a bandage is not a judicious and advantageous application to aid the restored perineum to do its work of restraining the advance of the organ which tends to fall out. The cure is complete, I have said, and it is a cure of which the surgeon may be proud. The cure is not only often complete, but also permanent. In illustration I may cite a case, and it is not of a rare kind. A multiparous woman, whose employment keeps her almost constantly standing, walking about, stooping, and lifting weights, had a large procidentia. She was operated on and cured by a colleague. The cure lasted a long time. She had again a child. The cure still lasted. Again she had a child, and soon after this the womb came down as badly as ever. The restored perineum was still anatomically entire; the cicatrix of the first operation could be traced; but its restraining function was lost: it was thin and relaxed. The operation was repeated. About three weeks afterwards she returned to her arduous employment, and was and now is quite cured. As her husband is dead, it may be hoped that the cure is for life.

What is the proportional number of failures and of successes after this operation I cannot tell. It is a proceeding to which I frequently resort, but I have found it impossible to trace the subsequent histories of the great majority of my patients. The sufferers from aggravated procidentia are for the most part very poor women, whose hard lives and frequent changes of residence form some excuse for their failing to fulfil promises to keep the surgeon informed as to how they are "getting on."

I have just mentioned a case in which the restored perineum continued entire after two births at the full time. The retaining function of the perineum was, in that instance, destroyed, not by laceration, but by distention. I have repeatedly seen cases in which the birth ef a mature child did not extensively or injuriously lacerate a restored perineum.

The operation runs great risk of failing from disorder of the healing process, the opposed raw surfaces secreting pus instead of uniting, if the subject of it is very old, if she is of syphilitic constitution, or if the parts are the subject of recent or of chronic inflammation. Of course, under these conditions, it should not be attempted.

In cases of laceration of the perineum the operation may be undertaken at the time of the accident or after the injured parts are quite healed. I have done it successfully at both times, and if circumstances are all favourable I would recommend its performance at the time of the accident. Yet I think a successful result can be more securely predicated of a delayed operation than of an operation done at the time of the injury. It is to be remembered that the perineum often appears to the inexperienced to be extensively injured during labour, and so as to demand operative interference, when truly very little harm has been done; as is made apparent by examination after the parts are healed.

The instruments required for the operation are the following:—a sharp bistoury, a dissecting forceps, a catch forceps, ligatures for arteries, needles armed with silver wire for stitching, and a scissors. Besides these, the ordinary appliances for all operations must be at hand, as sponges, etc.

The operation should be done soon after a monthly period has passed; and, in preparation for it, the bowels should be freely evacuated. On the morning of the operation the patient should have only soup or some light nourishment, in order that the vomiting so frequently accompanying and following the induction of anæsthesia, which is maintained during the operation, may be kept within the narrowest bounds.

In describing the operation, I shall suppose the case to be one of laceration of the perineum, the fissure extending through the sphincter ani. It will be unnecessary to go over the steps of the operation for procidentia, because, *mutatis mutandis*, they are quite the same as in a case of laceration.

The patient is placed and held in the position for lithotomy, and the surgeon is placed as he is during that operation. With his fingers or with forceps he seizes the fourchette, or that part which corresponds to it, transfixes it with the bistoury, and then continues to cut, first on the one side and then on the other, upwards from the fourchette or its representative as far as he deems necessary. In cases of procidentia it is usual to make the raw advance as far forward as to be nearly on a level with the orifice of the urethra. The operator thus removes a long tape-like piece of integument, which is about half an inch broad, rather less than more; and he leaves a horseshoe-shaped wound in which the point of the shoe is at the fourchette. It is important that the proper piece of integument should be removed, and it is at some parts a matter of care to secure this. At the fourchette there is little difficulty. It is quite easily made out, or may be made to project by separating the labia. Farther forwards on the sides of the vaginal orifice, the junction of skin and mucous membrane is sought for as the line of the wound, and it is not always quite easily found. The anterior margin of the wound is at or involves the posterior extremity of each nympha, and the line of the wound runs between this and the fourchette, its course being sometimes marked by the opening of the duct of the vulvo-vaginal gland on either side.

Generally two, sometimes four, arteries require ligature. Two of these are in front of the sphincter, one on either side: the other two are generally farther forwards near the nymphæ. A few minutes' delay is now caused by waiting for the complete or nearly complete stoppage of oozing from the raw surface. Then the wound is closed.

A series of silver-wire sutures is passed about one-third of an inch apart. The wire sutures, after being placed, are observed to pass through the wound near its deeper margin, and emerge on the skin or rectal mucous membrane about a third of an inch distant from the outer margin of the wound. Beginning posteriorly, each suture is tied with some firmness, the edges of mucous membrane and of skin being carefully adjusted to one another. Now the bladder is evacuated, the vulva is washed and dressed with some wet lint, and the operation is finished.

The alvine evacuations are stopped for about ten days by daily use of opium in some form. I use solid opium in one-grain pill at bed-time, or oftener if there appears need for it. The patient is fed on light food and sparingly. The urine may be drawn off twice or thrice daily, or the patient may herself make it while lying. The wound requires to be kept clean by daily dressing. Care should be taken that discharge does not accumulate in the vagina.

On the seventh or eighth day after the operation, the stitches are removed. Twenty-four or forty-eight hours afterwards the bowels, if they do not spontaneously move, are acted on by castor-oil.

The removal of the stitches is done as in the operation for vesico-vaginal fistula. A dissecting forceps is made to seize the projecting end of the ligature, and to tighten the loop by traction; then one blade of a sharp-pointed scissors is insinuated within the loop, and the scissors is made to cut it; after which it comes away by the traction of the forceps. But in a case of extensive perineal laceration it is sometimes difficult to get at the deepest or farthest back sutures. They may be half an inch or more within the margin of the new anus, and require considerable care in dealing with them.

Very many different plans for performing this operation have been proposed and practised; and of these many involve proceedings of which I disapprove, such as removing large portions of vaginal mucous membrane, and incising the sphincter ani. The plan I have rapidly sketched has the recommendation of being as simple as possible, and I have had such considerable experience of it as to justify my preferring it on the best grounds as being at e same time very successful and satisfactory.

ARTICLE II.—*On Feigned Diseases, their Detection and Management.* By GEORGE WILSON, M.A., M.B., C.M.; Medical Officer H.M. Convict Prison, Portsmouth; late Medical Officer H.M. Female Prison, Woking; and Assistant-Surgeon H.M. Invalid Prison, Woking.

(*Continued from page* 341.)

THE other feigned diseases of the nervous system which merit special attention are those connected with the brain itself. They may be grouped as follows:—

I. Feigned insanity.
II. Feigned epilepsy.
III. Feigned cephalœa and other cerebral disorders.
IV. Feigned and factitious diseases of the organs of sense.

I. Outside the criminal population I apprehend that insanity is seldom feigned. In prison, however, feigned attempts are of frequent occurrence, and, although usually their detection is not difficult, it is no easy matter to point out such a series of well-marked distinguishing features as will enable one to arrive at a correct diagnosis in every case. Generally speaking, a feigned attack commences without any premonitory symptoms. A prisoner has got himself into trouble, and wishes to evade the consequences; or he has given way to a violent outburst of temper, during which he may have torn up his clothing, and considers it expedient to keep up the excitement in some way. Or, again, he may be undergoing a course of punishment in separate confinement, which he is desirous of cutting short; and in some instances, though I think they are few, he makes the attempt deliberately, and with a view to his being ultimately removed to a lunatic asylum, or to some other prison for observation. But whatever the motive, the simulation, as I have said, is commenced suddenly, and often extravagantly. The malingerer's notion of insanity is so imperfect and erroneous that he believes any course of conduct, provided it be outrageous or nonsensical enough, will be a very credible representation of a real attack, and ought to be recognised as such, if he only perseveres. But it does not occur to him that, having once assumed his part, he ought to play it out consistently. If he breaks out in a violent, noisy, and destructive display, he very speedily becomes exhausted, and betrays himself by indulging in a sound night's rest. If he tries to ape monomania, he will keep repeating some absurd statement which he hopes will be regarded as a delusion, and will rigidly abstain from entering into any conversation, or of answering any question coherently. Should he feign dementia, he will very likely maintain a sullen attitude for some days if allowed to do so, and at the end of that time, or after a shorter interval, take to burlesquing of some kind to relieve the monotony. Hence it is that every attempt at feigning insanity is incongruous, incomplete, and disconnected. The simulator has never any lucid interval, because he believes that if he were to behave rationally for one moment, he would betray himself. He therefore studiously avoids recognition of those around him, disregards any questions which may be put to him, and will rarely look any one in the face. He is fond of stripping himself naked, is sometimes abhorrently filthy in his conduct, and occasionally refuses to take any food for a time. The varieties of insanity to which his imitations bear most resemblance are acute mania, chronic mania with delusions, and dementia. In many cases, however, different phases of the feigned attempt present resemblances—now to one, now to another of these varieties—and this want of coherency, or natural sequence of the phenomena, is in itself an important aid to diagnosis. Of course, in all cases there is an absence of those purely physical symptoms which, in greater or less degree, usually attend genuine attacks of insanity. If, for example, the attempt at the outset resembles an attack of acute mania, the pulse may be rapid from muscular exertion, and the skin moist; but there will be no evidence of febrile disturbances, nor will the skin be clammy, harsh, or dry. The tongue will not be coated, nor can the ceaseless agitation and restlessness characteristic of acute mania, themselves difficult to imitate, be prolonged for many hours; within twenty-four hours at the utmost, the malingerer will have exhausted his energies, and falls into a sound sleep. The diagnosis of a feigned attack of acute mania is, therefore, an easy matter, and I need not adduce cases to illustrate this part of the subject. Of a more puzzling character are those cases which present some of the features of chronic mania, monomania, or dementia; and here a few examples, which have recently come under my own notice, may be of interest:—

CASE 1.—Several weeks ago, prisoner J. S. was admitted into hospital suffering from loss of flesh and general debility. He had a pale dejected appearance, a hydrocephalic-looking head, and widely dilated pupils. He complained of dizziness when at exercise, great weakness, and slight cough, although there were no physical signs of pulmonary disease. His appetite was very good, and he was put on liberal diet, with tonics. He was not of the habitual criminal class; his conduct when in prison had been exemplary, and his behaviour in hospital in every way creditable. In short, he appeared to be one of those cases on which prison-life tells somewhat severely, and gave one the impression that he might also be suffering from nostalgia or home-sickness. He remained under treatment for three weeks; but though he had gained in weight, his appearance still remained pale, his expression languid and apathetic, and his pupils widely dilated, he himself admitting of no improvement, and indeed maintaining that he was becoming weaker every day. One morning about this time he would not get out of bed, and paid no attention to the warder when expostulated ·ith, but he took his breakfast as usual. When I saw him in the forenoon he refused to answer any question, nor would he put out his tongue when requested. His dreamy, staring eyes looked straight before him, and not even when I told him that if he did not put out his tongue, I must pull it out and have a look at it in spite of him, did he evince the slightest consciousness of what was said to him. His pulse was quiet, his skin cool, and I found that he had passed his urine in the morning. Although he was the last patient in the hospital whom I would have suspected of malingering, I felt convinced he was shamming in this instance, and accordingly applied the strong ammonia to his nostrils. He struggled a little, muttered something about his mother, and all of a sudden got hold of the sponge, saturated with the ammonia, between his teeth, and I believe, if I had not been prompt enough, would have swallowed it. He had then a dose of the electro-magnetic battery, to which he submitted without struggling. As he was in an open ward along with other patients, I was averse to pushing matters to extremes, and ordered a blister to the back of his neck, with a couple of drops of croton-oil to be taken internally. For two days there was no change in his symptoms or behaviour, but during the third night he got out of bed, went whistling through the ward, stopping now and again to stare into a patient's face, and ended by standing on the crown of his head on the top of the night-stool. Next day I ordered him to be restrained in a strait-jacket, and removed to a separate cell, and told him that the sooner he gave it up the better. He took the hint, and on the following day he appeared to be all right again—maintaining, however, that he did not know what was the matter with him. He was reported, and afterwards confessed that he had been "led into it" by other prisoners.

Now, this is a case which, at first sight, might have been mistaken for dementia of a subacute form; or, possibly, the widely-dilated pupils and the seemingly unconscious state might have suggested the existence of serous effusion into the ventricles or beneath the membranes of the brain. But against both of these views were opposed the facts that the bodily functions were performed naturally. He got out of bed to fetch his food, and ate it heartily; there was no retention of urine, nor did he pass either it or his fæces in bed.

CASE 2 is worthy of note, chiefly on account of the persistency of the malingerer. I find from the hospital papers that prisoner W. H. was admitted into hospital for observation 8th Nov. 1869. His previous prison history was one of repeated punishment for refusing to work, breaking windows, destroying his clothes, filthy conduct, and the like. On admission he alleged that he would not work because the terms of his sentence precluded labour, and that he was the Duke of Orleans. He was put on low diet, and was ordered to have the back of his head shaved and blistered, which latter operation he resisted so vigorously that it was deemed necessary to restrain him in the strait-jacket. In a few days afterwards he promised to "give it up," upon which he was allowed a more liberal diet, and subsequently discharged. But he disliked work of any description, and was not long out of the punishment cells, again maintaining that he was "Egalité," and varying the monotony of his seclusion with occasional outbreaks. He first came under my notice when I joined this prison in April last year, and I fully concurred in the opinion which had hitherto been entertained of him, that he was a malingerer. He was a sullen, bullet-headed fellow, and when he did speak, which was seldom, he still feigned the old delusions, and invariably refused to go out to work. This went on for some time, until one day he assaulted an officer, for which offence he was sentenced to be flogged by the Visiting Director, and to be kept in separate confinement for six months. During the whole of this period he scarcely ever exchanged a single word with any one. When his sentence expired he resumed the old practice of refusing to labour, and persisted in the old delusions. He repeatedly received bread-and-water punishment, and though sent to do the lightest out-door labour, would do nothing. He was again put under medical observation; but on this occasion his dull intellect had coined a new "delusion." He maintained that "he had been dead and crucified; that he had been made a martyr for the cause of the glorious religion," etc. Any questions as to his sentence, crime, age, name, his former life, and the like, he refused to answer. He slept well, took his food well, and, in spite of the blister at the back of his neck, would have been content to remain in hospital long enough, although he significantly hinted that he was sure no amount of treatment would make him give up his belief. I detained him in hospital for two weeks, and allowed him liberal diet, because after so much punishment he was somewhat below par. When discharged, he was reported to be sane and responsible for his actions; or, in other words, amenable to prison discipline. The sentence which was awarded him this time allotted him three days bread and water for every refusal to go to work during a period of fifteen days, provided, of course, as in all such cases, he were found to be medically fit. He was put to light labour, and refused to work on two consecutive occasions, after which he began to complain that he was very weak. I assured him that I would not in any way interfere, and, as kindly as I could, expostulated with him on the folly of his conduct. One day shortly afterwards he requested to speak with me, and promised to give up his scheming. Since that time he has behaved well, and been employed at ordinary outdoor labour.

CASE 3 may be cited as a doubtful case. Prisoner J. L. was admitted into hospital for observation 29th April 1868. He had been repeatedly under punishment, but always for the same offence, viz., an unfounded complaint about the due weight of his bread. The medical record goes on to state:—"The loaf was weighed in his presence, and yet he was dissatisfied. He has been heard to say that the doctor drugged his food so as to increase his appetite, and that the bread was purposely robbed of its proper proportions to torture him. He is not only a hard-working man, but in conversation he does not (with that exception about his bread) betray the slightest sign of mental aberration. It is a curious fact that, if his bread is stale, and therefore firm, he never disputes its proper weight; but if it is new, and therefore easily compressed between his fingers, he complains of light weight." He was retained in hospital till 5th August, during which period he repeatedly complained about the bread, and sometimes that his food was poisoned, stating that, though he could not detect any difference in the flavour, he knew it was poisoned from the effect on his stomach. When discharged he was recommended to the shoemakers' shop, because he had been a shoemaker by trade. On 21st Sept. of the same year he was again admitted into hospital for observation, having once more got himself into trouble, and created a disturbance about his bread. He remained in hospital till 1st Jan. 1869, the history of his case differing but little from what had previously been recorded; and, when discharged, I find the following entry:—" No sign of disordered intellect; says he has conquered his difficulty about light weight in his loaf." For more than a year afterwards he appears to have conducted himself tolerably well; but in May 1870, when he first came under my notice, he was a third time admitted into hospital for observation. The following is an extract from his hospital paper on this occasion:—" Patient maintains that frequently his food has been drugged, and in several ways. Although he cannot describe how this is done, he asserts that one way is so disgraceful that he could not mention it. When it is drugged he feels afterwards as if he could eat a bullock, and often becomes very ill-tempered without really knowing why. Complains also that his food is often of light weight. Is quite rational on all other points." He was kept under observation for two weeks, and, as there was no change in his symptoms, I certified him to be of unsound mind, and recommended his removal to Millbank Prison. As I have heard nothing of him since, the probability is that the same opinion of his case was entertained by the authorities there, and that he was ultimately removed to the Criminal Lunatic Asylum.

With regard to this case I frankly admit that there are certain points which might make it appear probable that the prisoner was an impostor. For example, although he often complained that his food was drugged, he never refused it, and, with the exception of his repeated outbreaks about this matter, his general conduct was satisfactory, nor was anything strange to be observed in his manner. It is true, he was at times moody, and was of a somewhat irritable temperament, but in this respect he did not differ from many prisoners who are considered to be amenable to prison discipline. There was no primary affection, such as acute mania or melancholia, nor did his delusion, if delusion it may be called, vary in its intensity or character during the separate period when he was under observation. Altogether it was a case concerning whose merits one could not decide with certainty, and under the circumstances I considered it to be my duty to give the prisoner the benefit of the doubt, though I must confess that such doubt was very shadowy in my own mind.

CASE 4.—On the 17th June this year, prisoner W. S. was found stripped to his shirt in his cell. He had been for some time in separate confinement on penal class diet for repeated breaches of discipline, but he had nearly finished his sentence. When spoken to, he kept his eyes shut, and, after crossing himself, commenced repeating the Lord's Prayer, the Creed, and portions of the Litany. For two days he refused food and drink, and on the third, I fed him roughly with the stomach-pump forenoon and evening. On each of these occasions I also gave him some strong whiffs of the liq. am. fort. During a period of five days he tasted no food of any description but what was pumped into him; and so dogged was his temper at this time, that I verily believe he would have died of self-starvation had he been left to himself. Whenever the liq. am. fort. was used, he promised to give up the feigning, but before the next visit he as invariably recommenced it. His head drooped on his chest, he allowed the saliva to trickle from his mouth, and would neither dress nor undress himself. Judging from his appearance, he might have been taken for a patient suffering from dementia, were it not that the tremulousness of the eyelids showed that he was always on the *qui vive*, endeavouring to peep out between them and see what was going on. After a time I admitted him into hospital, as he was in a somewhat emaciated condition, to try what kindness and a liberal diet would effect. Both were alike wasted on him, although he promised amendment whenever he had a chloroform or liq. am. fort. stupe applied to the nape of the neck, varied by an occasional dose from a galvanic battery. When he regained his normal weight, I discharged him, and he received a sentence of twenty-eight days' bread-and-water punishment in separate confinement. His feigning now assumed a new phase. He became extremely noisy and violent, would at times plaster himself over with his excrement, and would sometimes endeavour to assault any one who went near him. At last he was sentenced to be flogged. The punishment was administered a few days ago; and though he has not yet quite *given in*, there is every reason to believe that this treatment will result in a permanent cure.

This may fairly be regarded as one of those cases, so frequently to be met with in prison-life, which may be said to drift on that ill-defined border-land which separates sanity from insanity. For a time, the thin varnish which discipline supplies serves to conceal, and even to control, the turbulent nature within, but every now and again the veil is rent, and the prisoner becomes the veritable slave of frantic ungovernable passion, or of dogged determination to have his own perverse way in spite of expostulation or punishment.

The inherent—or rather, I should say, the inherited—mental incapacity of the habitual criminal makes him an easy prey to the worst impulses of the human heart. Possessed of little self-restraint or regulative power at any time, it is not to be wondered at that occurrences of the most trivial kind are quite potent enough to upset the unstable equilibrium of his mental and moral life. A cross word from a warder, a slight difference with a fellow-prisoner, or even a disordered state of the system, will often suffice to unhinge the passions and reveal the animal nature in all its naked repulsiveness.

Dr Maudsley, in his chapter on the Insanity of Early Life, writes: —"There is another class of boys who cause great trouble and anxiety to their parents and to all who have to do with them. Afflicted with a positive moral imbecility, they are inherently vicious; they are instinctive liars and thieves, stealing and deceiving with a cunning and a skill which could never be acquired; they display no trace of affection for their parents, or of feeling for others; the only care which they evince is to contrive the means of indulging their passions and vicious propensities. Intellectually, they are certainly defective also, for they usually read no better when they are sixteen years old than a healthy child of six years of age would do; and yet they are very acute in deception and in gratifying the desires of their vicious natures. Passionate, selfish, cruel, and sometimes violent, they are intolerable at home; and if they are sent to school, they are sure to be expelled. When they belong to the lower classes, they find their way to prison many times; indeed, they contribute their quota to the criminal population of the country; when they belong to the better classes, there is nothing for it but to seek out some firm and judicious person who, for suitable remuneration, will take care of them, keep them out of mischief, and, while checking their vicious propensities, will try to discover and foster any better tendencies which they may have in them. The resemblance of these beings in moral character to the lowest savages, and even to monkeys, is not without interest."

I have quoted this passage because I believe it to be a scientific and accurate description of the psychological state of the great majority of our habitual criminals. They form a distinct class by themselves, and are fitter objects for well-considered reformatory influences than for punishment. Not that I think that punishment, when judiciously administered, is not attended by good and wholesome results, but it ought not to be applied indiscriminately, nor without taking into consideration the condition of mind in consequence of which any violent outbreak or serious breach of discipline has taken place. Such prisoners are subject to a real "mania of acts," and it requires great care and tact on the part of all who have charge of them to treat them fairly and justly. Out of prison the law takes no cognisance of their inherited or acquired predatory disposition and insane temperament; they are regarded as agents wholly responsible, and punished accordingly. When they finish their sentences, they are again let loose on society, and, true to their nature, again return to their old habits. It is like discharging lunatics from an asylum before they are cured; but the public has not yet learned to look at the matter in this light, and so both the public and habitual transgressors against its social institutions have to suffer from a policy which is as thriftless as it is near-sighted and unjust. The habitual criminal, I maintain, ought not to be liberated until the authorities have assured themselves that he is so far reformed as to be safely trusted with his liberty. As it is, however, at the close of every fresh sentence he is allowed full scope to propagate crime in two ways,—by the direct transmission of his criminal taint to his children, should he beget any, and by the force of his example or the pernicious influence of his teaching on the young of both sexes who may come within his reach.

It may be thought that this is somewhat apart from the subject in hand; but in treating of feigned insanity, especially amongst prisoners, these pathological states of the criminal mind cannot be overlooked. While a comparatively large percentage of the habitual criminal class are acknowledged to be insane, imbecile, or epileptic, and are therefore not subjected to the ordinary restrictions of prison discipline, there is a far greater number who are liable to attacks of maniacal excitement, but who cannot on that account be excused from complying with the prison rules and regulations. Female prisoners of a depraved character are notably prone to these attacks, and generally at the menstrual period; indeed, with some who have come under my notice, an outbreak could be predicted whenever the period commenced. It would be alike without avail and cruel to punish severely all who offend under such circumstances as these; and as the question concerning the degree of responsibility of the delinquent depends on the medical officer, it is his duty to recommend mitigation of punishment whenever he thinks the merits of the case warrant it. At the same time, I am bound to admit that, with male prisoners, I have seen the best results follow a flogging when no amount of other punishment, expostulation, or kindness, could check a course of conduct that appeared outrageous enough for the devil-possessed; and, with incorrigible female prisoners, shaving the head has a wonderfully calmative effect.

Concerning the best means which can be adopted to make the malingerer who feigns insanity give it up, I need say little. Here, as in other feigned diseases, the galvanic battery is of great assistance, or a chloroform stupe applied to the nape of the neck. This latter remedy is speedy and safe in its action; and the intense stinging pain which it produces will, in a few minutes, make the schemer speak, if he is inclined to be taciturn, when harsher means fail. I need hardly say, that sharp measures such as these are never employed as means of diagnosis;—the nature of the case must be clear before they are had recourse to, and then they can be conscientiously administered as legitimate remedies.

It would have been an easy matter to have cited a larger number of cases; but I preferred to bring forward a few that presented more difficulties in the way of diagnosis than those usually to be met with in prison practice. I shall now endeavour to recapitulate briefly some of the more salient points in diagnosis, which, though they may not be of much value when taken singly, may nevertheless be of some service when taken collectively.

1. In feigned insanity, the attack comes on suddenly and without any warning. This is rarely the case in real insanity.
2. There is an absence of all purely physical symptoms.
3. If the feigned attack be violent, the malingerer soon exhausts his energies, and will fall into a sound sleep within twenty-four hours.
4. In the ravings of feigned insanity, there is a marked absence of any variety of ideas.
5. In all feigned cases, the malingerer will either refuse to answer simple questions, or will answer them in a wilfully absurd and incorrect manner.
6. He will seldom look any one in the face.
7. If delusions are feigned, he cannot conform his conduct and bearing to the character of the delusions.
8. As a rule, the feigned attack is over-acted.
9. There are no lucid intervals, the malingerer striving to appear insane on every point.
10. A feigned attack is so incongruous and incomplete, that it is next to impossible to classify it under any of the known varieties of insanity, whereas all feigned attempts bear a greater or less resemblance to each other.

There are several other points which are common to cases of acute mania, such as stripping naked, filthy conduct, and age (the prisoners who feign insanity being all young); but to these I do not attach much importance.

II. With regard to epilepsy, the difficulty experienced in detecting feigned cases does not consist so much in being able to discriminate between a false and a genuine attack when seen, but in being able to determine whether or not a patient, when brought forward after having had a "fit" which others have witnessed, has really been feigning. If the patient be seen immediately after the "fit," a good deal may be gathered as to its nature by his appearance and behaviour. Should there be no suffusion of the eyes, no puffiness and redness of the eyelids, no torpid and heavy appearance of the countenance, no confusion of thought, and no headache, the "fit" may pretty safely be put down as a feigned one, if the convulsions are described as having been violent or prolonged. It will also be found, as a general rule, that the patient has not injured himself in any way, provided the attack has been feigned in the presence of others.

For example, there are no signs of the tongue having been bitten, nor any bruises from a fall. But sometimes a prisoner, who says he is subject to fits, presents himself with very distinct marks on the face or head, and maintains that he received these while in a fit, and when he was locked up in his cell. I have met with several such cases, and it has always turned out that they were malingerers. With one exception, the marks have always consisted of abrasions on one or both temples, and sometimes on the nose, in which the cuticle has been removed by friction, either by a rough towel, or by rubbing the parts against the cell wall, or on the floor. Not long ago, however, I saw a prisoner who presented himself in this way, having a contused wound on the forehead, surrounded by a considerable amount of tumefaction, as if produced by a violent blow. He said he had fallen down in a fit; and though his appearance was by no means epileptic, and he had the reputation of being a malingerer, I could hardly help concluding that the "fit" must have been genuine. But the merits of the case were cleared up shortly afterwards. The prisoner happened to have a "fit" when I was near at hand, and I had sufficient grounds afforded me for altering my previous opinion. There is no doubt that he had intentionally knocked his head against the wall or floor.

In dealing with these cases, I have generally found it to be most expedient to speak frankly to the prisoner; assuring him, if there be no doubt in my own mind, that I believe his "fit" was feigned, and that I cannot change my opinion until I have an opportunity of judging for myself by seeing him in a "fit." He is also told that having a fit now and then need not interfere with his work, provided he is not working where he runs the risk of falling from a height. If employed at such work, he is recommended change of labour, suitable enough for an occasional epileptic, but none the less arduous. He will afterwards either take the hint, and give up this species of feigning, or he will afford an early opportunity of being seen in a "fit," when, as I have already said, detection is not difficult, and he gets reported and punished.

The symptoms of a common epileptic seizure are so well-marked and unique, that we can scarcely conceive it possible that they could be well feigned, even by a person sufficiently cognisant of them. The sudden fall; the frequent scream or groan when the attack sets in; the total loss of consciousness; the violent convulsions; the rapid jerks, as if caused by a galvanic battery; the contortions of the facial muscles; the short and hurried breathing; the grinding of the teeth and foaming at the mouth; the spasmodic turned-up action of the eyes; the insensible iris; the pallid, afterwards bloated, congested countenance; the clenched hands; the bitten, bleeding tongue—are, in the majority of cases, more or less so well-pronounced, that their genuineness cannot be mistaken. In the feigned attack, on the other hand, the mind of the impostor can only direct its energies to the display of two or three manifestations simultaneously, and even these give the impression of studied effort; whereas, in a real seizure, the absence of all control is not only prominent, but every symptom seems to be under the influence of a power beyond human effort. Fortunately, however, a differential diagnosis between a real and feigned epileptic seizure need not be confined to symptoms; for, if the case looks suspicious, the application of a sponge saturated with strong ammonia to the nostrils will speedily make clear its character. Sometimes dashing cold water on the patient will make him wince, though in the majority of cases it does not readily bring him to his senses; but if the hand or a towel is pressed over the lips so as to prevent breathing through the mouth, the schemer will at once commence to struggle, and, according to my experience, gives in almost immediately, if the sponge be kept applied.

III. Headache and vertigo are frequently feigned by prisoners, in order to escape work for the day, or to gain admission into hospital. In arriving at a decision in such cases, a great deal may be gathered from the character of the patient, especially if there be no significant physical sign to lay hold of. If the tongue be clean, the pulse quiet, and the countenance devoid of any expression of pain or discomfort, there need be little doubt that the case is feigned, or, at any rate, that the complaint is exaggerated; and an emetic, judiciously administered, will, in all likelihood, produce a permanent cure. Children, it is well known, are very apt to feign headache on the slightest pretexts; but to them a dose of salts and senna, or of Gregory's powder, is sufficiently distasteful to prevent them from frequently repeating this form of scheming.

I have never seen an instance of feigned hemiplegia, nor can I conceive, though several such instances have been recorded, how any painstaking medical man could be duped by a case of this description. It might be easy to drag one leg, and to allow the arm to hang listless and slightly adducted by the side, but no amount of effort could at the same time produce the flabby and relaxed state of one side of the face, the drawing of the mouth to the other, the inequality of the size of the nostrils on deep inspiration, the characteristic curve of the protruded tongue, and the peculiar twist of the mouth on attempting to blow or whistle. A careful examination would also detect, in the real disease, a slight difference in temperature between the healthy and affected sides, as well as a difference in the firmness of the muscles and general condition of the limbs.

Severe neuralgic affections, whether proceeding from derangement of the cerebral or spinal system, are always attended by an expression of countenance indicative of pain, which cannot easily be feigned; and particular diseases, such as sciatica and tic douloureux, are so clearly defined, that patients suffering from them can describe the symptoms with sufficient precision as to admit of no doubt concerning their genuineness. Pain itself cannot be regarded as an isolated symptom if it be of any severity. The patient ought to be able to localize it, and to describe its character; if he can do neither, he suffers from what is called the "all-overs," and may safely be put down as a *humbug*. I need not say that in all such cases, inquiries are made with regard to appetite, loss of sleep, the state of the tongue, pulse, etc. No concomitant symptoms should be overlooked, and no adverse opinion given unless it is well considered and admits of no question.

IV. Feigned diseases of the organs of sense are confined to affections of the eye and ear. Now that the ophthalmoscope has been introduced into practice, and the study of eye diseases has become so general, such conditions of the organ of vision as myopia and amaurosis cannot well be feigned successfully. A person pretending to be short-sighted will not readily pass an examination with different sets of glasses (plain, convex, and concave) without being detected; while with the aid of the ophthalmoscope, one ought to be able to make out the pathological changes which take place in the really amaurotic eye. In suspected cases of amaurosis, a ready test can also be resorted to by confining the patient in a dark room for a time, and afterwards exposing him to a bright light, such as that of the burning magnesian wire. If he can bear such a light without wincing, and if the iris remains sluggish, and the pupil dilated, there is no doubt that vision is affected.

In my own experience, however, I have found that tampering with the eyes, so as to induce conjunctivitis, or ulceration of the cornea, is of far more frequent occurrence than feigned myopia or defective vision. Any irritating substance, such as a small particle of lime, white-wash, etc., if introduced beneath the eyelids will, in a short time, produce a highly congested state of the whole conjunctival membrane, and ultimately ulceration of the cornea, if the irritation be kept up. As a rule, both eyes are tampered with, and present an intensely inflamed appearance when first seen, the inflammation being pretty equally diffused over the whole membrane. The patient generally states that the inflammation set in during the night, and attributes it to cold. Treatment, if limited to the usual remedies, does him no good; so that the conjunctivitis, which commenced without any apparent cause, may continue to exist for weeks. In such cases as these, and indeed in all cases of conjunctivitis setting in suddenly and unaccountably, it is advisable to examine minutely with a magnifying lens the surfaces of the eye and of the everted eyelids, when very frequently some foreign substance may be discovered. If removal of the substance be not followed by relief, there need be no doubt that the irritation is kept up in some way, such as by rubbing the eyes, by bathing them with urine, by inserting soap, etc. But the disease may be factitious without our being able to discover the means employed, and hence, in all suspicious cases, the speediest and most effectual treatment is to prevent any further tampering. After having the inflamed eyes carefully douched with cold water, this can be effected either by applying a pad of cotton-wool, and retaining it with strapping and bandage; or, if this be interfered with, by having the patient put in the strait-jacket and tied down in bed.

Little need be said with regard to feigned or factitious diseases of the ear, though both in the army and amongst prisoners cases are not at all uncommon. Feigned deafness comes on suddenly, whereas the real affection takes place very gradually, and is, or has been, accompanied by some tangible symptom of disease. A person not wholly deaf has a gaping and observant cast of countenance, the mouth being kept open to aid the hearing, and the eyes keenly watching the movements of the lips of any one addressing him. He generally talks in a loud, harsh, unmodulated tone of voice. The impostor, on the other hand, has a furtive expression, does not elevate his voice when speaking, and generally overacts his part. In coming to a decision with regard to such cases, it is necessary to inquire minutely into the history of the complaint, and to make a careful examination of the ear itself. A little *finesse* in conducting the conversation, or in taking the patient by surprise, will generally succeed in detecting imposture.

Otorrhœa is sometimes simulated, and sometimes induced. It has been feigned by introducing honey, soap, etc., and excited by the introduction of acrid substances. A free use of the speculum and ear-syringe will suffice to make clear the character of such cases.

(*To be continued.*)

ARTICLE III.—*Observations on the Therapeutic Value of Chloral.*

By ALEXANDER EDWARD M'RAE, C.M., M.B., Fettercairn.

(*Read before the Forfarshire Medical Association, July* 1871.)

THE late Sir J. Y. Simpson is said to have prophesied, years ago, that amongst the new organic compounds almost daily discovered, some narcotic would be found "as important as that most useful of all drugs, opium, and yet without either its direct constipating effects, or its indirect tendency to produce subsequent nausea." It seems, however, that prior to the utterance of this prophecy, Baron Liebig had actually discovered, in 1832, the substance now known as chloral, though for wellnigh forty years it remained, as did prussic acid, a chemical curiosity. Chloral is a chlorate of carbon, and is composed of three atoms of chlorine united to two of carbon, is liquid, but on the addition of an equal quantity of water solidifies into a white amorphous mass, and is known as the hydrate of chloral.

In this state its therapeutic value was made known by Dr Liebreich of Berlin, about two years ago, and since then who has not used chloral? As the hydrate alone, it is sold in commerce, and many makers now vaunt their own productions as the most valuable; and since its introduction into Britain upwards of eighty tons have been used. The specimen that contains the greatest amount of chloroform is said to be of the greatest therapeutic value; 72 per cent. is about the highest. That which contains least chloroform and most alcohol is said to be of least value. The least reliable kinds contain only about 50 per cent. of chloroform.

Many and various have been the remarks made and printed regarding its value as a therapeutic agent; the prophetic voice has been raised in no measured terms to sound its future glories, and I may safely say that there are few practitioners in Britain who have not tried it, and been more or less delighted and thankful with its results. Hundreds of cases have now been recorded. In many, marvellous results have been obtained; in others, either from the insufficiency of the doses, or not continuing its use long enough, or the inappropriateness of the case, no benefit has been derived; and in some, no doubt disastrous results have occurred; but the value of the drug is not to be estimated by its failures. Much is now known of its effects, and when the *rationale* of its action is determined, and the how and the when it is to be administered are better known, undoubtedly chloral will become a safe, valuable, and highly-prized medicine.

Without digressing to give you the history of the various steps in this important discovery, I shall lay before you a brief summary of the chief facts observed by myself and others, and from these facts I trust we will be able in some measure to form an estimate of its value as a pure hypnotic of the first degree.

There are three modes of administering chloral: by suppositories, per rectum; injection, hypodermically; and in draught.

Whidborne has found suppositories composed of one to two drachms chloral, made with hard soap and honey, very useful when the stomach rejects the draught. When given hypodermically, its action is similar as when taken in a draught; but it is said that when thus used it has created abscess, gangrene, and pyæmia; I myself have seen severe inflammation of the cuticle and subcuticular abscess in rabbits. Nevertheless, so good an authority as Richardson has not observed this condition. It is, however, almost always given as a draught, the vehicle varying according to the caprice of the prescriber or the wish of the patient. When taken as a draught, in a dose varying in different individuals, and in the same individuals at different times, it sooner or later acts as a hypnotic, producing a pleasant and refreshing sleep, without loss of consciousness. When given in small doses, neither consciousness nor reflex action are destroyed; if given in 90-grain doses or upwards, anæsthesia more or less profound is produced.

Many have recommended it to be given in syrups, or medicated waters. These often increase the pungency, and produce nausea. I believe the best vehicle is plain spring water, not less than an ounce to each 30 grains. The more freely the drug is diluted the better.

In regard to the dose, there is more difficulty, and it varies according to the strength, disease, habits, age, amount of exhaustion present, size of the patient, and the quantity of food in the stomach. Teetotallers are said to require smaller doses than free-livers. Strong, robust people, accustomed to good diet and plenty of exercise, require much larger doses than people that are naturally of weak constitution, or made so by sickness. The more intense the pain, the dose will require to be correspondingly large. It has been said that when given daily to the same patient the dose has to be increased. I cannot say that I have found this to be the rule. It may be the fact in some cases for the first few days, until the exact dose required to produce sleep is gained, but when its exhibition is extended over weeks or months, I have not found that the dose has to be increased. In some cases I have found the reverse: where 40 to 50 grains were required some nights, I have found 20 and even 15 grains produce sleep, from six to ten hours, on other nights in the same patient. I consider 30 grains a fair dose to give to an adult patient, and if no effect is produced in two hours, I should give other 15 grains. Dr Will of Aberdeen has given 4 grains to a child eight months old. Usually 15 to 60 grains will produce sleep in ten to fifteen minutes; 30 to 77 grains permits the painless extraction of teeth. Richardson considers 120 grains a dangerous dose, and 180 grains a fatal dose. Dorigo gave a boy 90 grains a day for fifty-four days, and cured tetanus. Grandisso-Sylvester gave a girl, eight years old, half an ounce in five days, and cured tetanus. Bensasson of Tunis gave a boy of thirteen 5 ounces in thirty-five days, and cured tetanus; and Dr Fuller records a case where 30 grains proved fatal to a young lady, and another case where 30 grains produced very alarming symptoms on two different occasions. Although millions of doses have now been given, representing an amount of freedom from suffering, and peaceful hours of slumber, far surpassing that given by any drug or all narcotics put together, in the same number of years as chloral has been in use for months, very, very few indeed have been the cases where absolute harm has resulted; and in these cases it is impossible to say how far the ignorance of the administrator was to blame.

Chloral is said to undergo a chemical transformation in the blood, and its introducer, Liebreich, says that it is changed into chloroform by the alkalinity of the blood during its passage in the circulation. Personne of Paris also supports this view, and Mr Ralph of Victoria, who has been experimenting largely on the animal economy with the microscope, agrees. He says that chloral in its passage through the circulation is decomposed by the alkaline salts of the blood into chloroform, and either formyl or a formiate of some alkali; and he believes that the action of the chloroform is considerably altered by the formiate. He found that when administered by the stomach or subcutaneously injected, it gives rise to bright or dark-red particles, masses, or globules in the blood. Starch bodies are likewise met with accompanying these changes. The urine also exhibits these bodies. Formic acid added to fresh blood also causes the production of dark-red globules or particles. Other experiments showed that similar effects were produced by lactic and prussic acids conjoined. In strong proof of this opinion, some have remarked the odour of chloroform as distinct from that of chloral in the exhalations from the skin, and some intolerant of chloroform are also intolerant of chloral. Demarquay, however, takes exception to this view, and believes that chloral is not transformed into chloroform in the blood. If it were, he says we should have the same effects produced as we have with chloroform, and he assures us he has remarked the odour of chloral in the breath. This my friend, Dr Will, also confirms. Demarquay holds, therefore, that chloral is eliminated through the respiratory organs, and is not decomposed in the blood. He also remarks that the symptoms look similar to those produced by section of the sympathetic nerve, so well described by Claude Bernard. I see no reason why chloral should be decomposed by the alkalinity of the blood more than alcohol, which is an allied inorganic carbonaceous compound, and is found unchanged in the ventricles of the brain of those who have died from excessive indulgence. I do not know whether Demarquay may mean the effects produced by the inhalation of chloroform, or those produced by imbibition. I believe the effects produced by chloral, and those produced by a moderate dose of chloroform when taken internally, are the same, viz., muscular relaxation, determination of blood to the surface, relief of pain, and sleep without unconsciousness. If I understand Demarquay to mean the effects produced by inhalation, then I agree with him that the effects are not similar. If he means the effects produced by imbibition, I must demur to his conclusions, for I believe, as I have said above, that they are similar. In that case I should vote for Liebreich's view. Demarquay's arguments in favour of his own view are too hypothetical, and will not stand before the more powerful arguments of chemical research, as shown by Liebreich and Personne. I must refer you, however, to the periodicals of the time for these experiments.

Although all are not agreed as to its chemical transformation in the blood, all join issue and believe that chloral, transformed or untransformed, acts directly on the cerebro-spinal centres, only one man declaring his disbelief, and asserting that it acts directly on the cerebrum alone. Brunton says that "chloral acts on the brain, producing deep sleep, during which there is no sensation, no voluntary motion. The reflex function of the spinal cord is first increased and then diminished in frogs. In guinea-pigs and rabbits it is diminished for thermal irritants, but not for tactile ones—pinching producing reflex action, but burning or pricking none. It leaves the motor nerves, vagus, and muscles unimpaired, but diminishes the activity of the respiratory nerve-centres, rendering the breathing slow, and of the cardiac ganglia somewhat weakening the heart. It lessens the blood-pressure and tension, probably by dilating the vessels at the surface, as the ears of a rabbit become hot and its vessels dilated, while the general temperature is falling." Demarquay, in No. 40 of *Gaz. Hebdom.*, gives, as the results of his experience, the following:—" (1.) It has a well-marked hypnotic action, particularly on feeble and debilitated individuals. (2.) The duration of its action is in direct proportion to this feebleness. (3.) The slumber which it produces is generally calm, and free from agitation, except in those patients who are the victims of acute suffering. This fact," he says, " induces me to recommend chloral in diseases in which one desires particularly to bring about sleep and muscular resolution. (4.) This agent may be given in a sufficiently elevated dose, and no bad symptom is produced by the administration of from 15 to 80 grs." In the same paper he remarks that, " if the sensibility of the animals is examined during the experiments, it is found that they possess an exaltation of this faculty." " Under the influence of chloral the pulse becomes extremely small, and at the end it can no longer be reckoned. The animal temperature, under the influence of this agent administered in strong doses, lowers from half a degree to a whole degree." Dr Crichton Brown has recorded several cases, and Dr Husband one case, where considerable flushing of the face took place and urticaria was developed, thus showing a determination to the skin. In one case I have seen the flushing followed by pallor, and in the same person a determination to urticaria prevented by daily aperients. In the 42d No. of the *Gaz. Hebdom.*, Dreulafoy and Krishaler conclude, from their experiments on rabbits, that we may produce at will, with hydrate of chloral, exaggerated sensibility and complete insensibility. They experimented by subcutaneous injection, and found the results more reliable than when given by the stomach, the latter depending on the quantity of food the stomach contained. The following are their conclusions:—" (1.) Chloral in small doses excites sensibility—in elevated doses it reduces it gradually to complete anæsthesia. (2.) The narcotized animals pass through an anterior state of excitability. (3.) General and absolute anæsthesia may remain for several hours; they then almost always invariably succumb. (4.) Sleep exists with hyperæsthesia as with anæsthesia—in the latter case the resolution is absolute. (5.) Chloral modifies profoundly the number and rhythm of the movements of the heart; it causes progressive slackening of the movements of the diaphragm, and lowers considerably the temperature. (6.) The phenomena excited by chloral are, in many points, different from those caused by chloroform, although the anæsthesia is equal in the two cases. (7.) Rabbits treated by doses exceeding 2·5 grammes—equal to 31 grains—are always rendered anæsthetic; by doses above 3·5 grammes, or 46 grains nearly, they are rendered anæsthetic and killed; by doses below 15 grains they were put to sleep, but neither rendered anæsthetic nor killed; by doses below 60 centigrammes no effect was obtained." With these conclusions, any one wishing to use chloral may accept them as his creed, and proceed on his noble mission to suffering humanity, and soothe the fevered in the Lethean stream.

It will be seen, therefore, that opinions differ somewhat regarding its anæsthetic properties, and some again do not even mention the increased excitability. Undoubtedly, however, it possesses these properties, and they are related to each other in time. The only reason I can give for this seeming discrepancy is, that experimenters have not, like Dreulafoy and Krischaler, drawn their conclusions from a sufficient number of experiments made upon material of equal conditions and variety of doses. Another reason is, that many have drawn their conclusions from observations of its effects on the morbid human economy—a source fraught with many quicksands to reliable conclusions. To explain my ideas of the different phenomena produced by the exhibition of chloral in a healthy animal, I shall divide them into seven arbitrary degrees, each degree possessing quite distinct symptoms depending on a certain undetermined dose. 1°, If a small dose is given, no appreciable effect is produced; 2°, If a larger dose, hyperæsthesia is produced; 3°, If still larger, hyperæsthesia and sleep; 4°, If still larger, hyperæsthesia, sleep, partial unconsciousness, and muscular resolution more or less; 5°, If still larger, hyperæsthesia passing into anæsthesia, sleep, unconsciousness, complete muscular resolution, cessation of pain; 6°, If still a larger dose, these states become more profound, and hyperæsthesia passes into anæsthesia, pallor is exhibited, and vital temperature falls; 7°, If the dose is very large, then complete anæsthesia, coma, and death. These, I believe, are the true sequence of events in the phenomena evolved in the animal economy by the administration of chloral. The ludicrous stories that are told of medical men being sent for in the middle of the night to go with all speed to see patients whom they had fondly hoped were reposing peacefully in the arms of Morpheus, but who had received a dose of the sixth degree, and alarmed their friends by their stertorous breathing and complete anæsthesia, rushing into the bedroom in despair, and finding two or three hours' hard work and careful watching as a punishment for their disbelief in its anæsthetic powers. These incidents, though sometimes producing a little laughter at the expense of the doctor, tell their own tale seriously enough, as in the case of the young lady recorded by Dr Fuller, and that of the clergyman recorded by Dr Hunt.

Another property of chloral is its power of resolving muscular spasm or rigidity. All observers are agreed on this point, so far as

I have seen. As such, it is a valuable and powerful drug, and does not possess the same objections that other drugs belonging to this class do. Its use with this view is very extensive.

Some assert that it is only a simple stimulant, and in many respects its action is analogous to that of alcohol. Undoubtedly their action has many points in common. For instance, alcohol given in small quantities excites, and produces hyperæsthesia, and a determination of blood to the superficial vessels, and increases the heart's action; when given in large doses, it lowers the temperature, modifies the heart's action, produces profound muscular relaxation and complete anæsthesia. What else is the meaning of the vulgar phrase "dead drunk?" Yet choral can do more than this, for if given in proper doses, it induces sleep within a few minutes, and acts as a calmative, and leaves no bad effects behind. This cannot be said of alcohol. Again, it relieves excessive irritability—the usual source of reflex action; but it is as a hypnotic that its chief virtues are prized so highly. Dr Clarke says, "While it does not produce headache, derange the digestive organs, nor cause loss of appetite or nervous prostration, it leaves the effects of a sound and placid sleep, and a night's repose is always fraught with great advantage, particularly to those labouring under a malignant disease; and where a hypnotic is indicated, we possess in choral an efficient and safe one;" and I assert that it is more certain than bromide of potassium, and is without the disagreeable sequelæ of opium. In procuring sleep, therefore, and resolving muscular contractions, we have a drug that has proved itself more useful than any other, and without the serious objections of others. Considering that it is a relaxer of muscular contractions, it must be useful in that large class of cases comprehended under the generic term *Neuroses;* and indeed the many records of cases that now exist amply prove its great usefulness in that class of diseases. Indeed, for tetanus, sleeplessness, and delirium tremens, it may be said to be a specific. "It has charms to soothe the savage breast," and gives

> "Sleep, that knits up the ravelled sleeve of care,
> The death of each day's life, sore labour's bath,
> Balm of hurt minds, great nature's second course,
> Chief nourisher in life's feast." SHAKESPEARE.

As an anodyne, it also possesses great powers when given in small frequently-repeated doses, and as such might be called the "friend of woe," as opium used to be called the "sheet anchor."

To sum up, then, seeing that chloral is an anodyne, a calmative, a relaxer of muscular contraction, a reducer of vital temperature, a tranquillizer of the heart, a reliever of vascular tension, a producer of superficial hyperæmia, a sleep producer, a hyperæsthetic, an anæsthetic, etc., we should expect it to be useful in allaying the pain of abscess, malignant tumours, in rheumatism, and in gout, in colic and mental excitability, in spasm of the voluntary and involuntary muscles and sphincters, in contracted pupil caused by reflex action, in strangulated hernia, in the passage of calculi, in luxation of joints, in rigidity of the os and perineum, in spasmodic croup and hiccough, in asthma depending on reflex action, and in constipation caused by irritability of the bowel, in pyrexia, and in functional irritability of the heart, in throbbing of vessels and coldness of the surface, in engorgement of the viscera, in white softening of the brain, and in those states of the cornea depending on malnutrition from weak circulation, in skin diseases from the same cause, in sleeplessness from whatever cause, whether pain, delirium, mania, or old age, in sluggish circulation, in operations more or less severe, in diminished irritability, and, strange to say, in increased irritability from whatever cause. These latter may appear a paradox, but we must bear in mind that chloral in large doses has very different effects from what it has in small doses. Neither must we forget that many of these diseases may have remedies more suitable to their peculiarities than chloral, and that there may be other conditions present that may contraindicate its use, such as pleurodynia with hæmoptysis, spasm of the bowel with dysentery, spasm of the uterus with retained placenta, in which cases I should fear fatal hæmorrhage. Although I am aware that so great an authority as Sir J. Y. Simpson gave it in a case of bronchitis with hæmoptysis, and expressed no fear, I am inclined to think that Sir James "rushed in where angels fear to tread." In a case of hysteria, where I gave chloral for months, hæmatemesis became so frequent and so violent that twice the patient's life was despaired of, and I had to abandon its use altogether. Another case is recorded by Dr Husband, where fatal hæmorrhage occurred in a case of fibrous tumour of the uterus. These may be explained, when we remember that chloral is a decreaser of arterial tension when given in doses of the fourth degree.

Regarding its great use in cancer, let me quote from Mr Weeden Cooke: "With the greatest faith and ardent hope, I have worked conium by itself, in combination with hyoscyamus, with belladonna, and conjointly with bark, thoroughly; and I still use it advantageously in some cases, but I regret to say it does not supply the need. It does not give relief from pain without disturbing the digestive process, neither does belladonna, nor hyoscyamus, given alone or in combination; . . . . and morning sickness and loss of appetite are the penalties paid for a night's rest procured by morphia or opium frequently administered. Turning, then, to hydrate of chloral, there arises a hope that we have in view a method of relieving pain, and securing sleep, which shall not interfere with the assimilation of food, and which may be employed without producing any sort of unconsciousness. . . . . The results obtained in the cases in which I have employed it are so charming, so persistent, that, fortified by the experience of others, I feel bound to add mine in confirmation of the excellent result obtained from this drug." Dr Maxwell Adams, of Lanark, says that "chloral will almost instantly induce sleep where the brain is functionally or organically disturbed." I cannot, however, say that I have found this invariably to be the case. A patient, a convalescent from acute mania, goes to sleep in twenty minutes with a 15-grain dose; occasionally, however, she requires 45 grains within four hours. Those days that she has least exercise she needs almost no chloral, and when she has had a deal of exercise, especially in the evening, she requires a large dose. To obviate the tendency to anæsthesia, I find that when a large dose of bromide of potassium is combined with a small dose of chloral, say 20 and 15 grains of each, a refreshing and placid sleep is produced, without the stertorous breathing, but the stupid appearance of the patient is increased next day, and she is mentally duller. Another fact is, that when 40 or 60 grains of chloral will not produce sleep, 15 or 20 will when combined with 20 or 30 of the bromide. It is now a well-ascertained fact, that when combined with other narcotics, a much smaller dose of chloral will produce sleep. In rheumatism and gout, its anodyne and hypnotic effects are of immense value. In colic I have found it of very varying use, being very frequently rejected. Where there is valvular disease of the heart, I have always found that it was rejected immediately. This may be a safeguard, for knowing that chloral decreases the activity of the ganglia of the heart, it should not be given where there is any mechanical obstruction to the free flow of the blood. I observe that Drs Fuller, Crichton Browne, and Dunlop of Jersey, agree with me on this point. Oddly enough, their patients kept the draught and the unwished-for symptoms were developed, while my patients invariably rejected the draught in a few minutes. I have no experience of its use in reducing the temperature in fevers, but Dr Russel, of Glasgow, gives a very scientific and elaborate account of his doings with chloral. I have found it useful in relieving cramp, in checking nocturnal micturition in children. Its action in these cases is marvellous, and I have no doubt it would be equally so in spermatorrhœa. In patients troubled with frequent micturition, not caused by stone, it is decidedly useful, and under repeated small doses they are able to retain their water a very much longer period. In tenesmus it proves of great value; and several cases are recorded of its successful exhibition in cases where excruciating pain was caused by the passage of calculi, both renal and hepatic. A few weeks ago I was called to a man who exhibited all the symptoms of renal calculus of the left kidney. The pain was excruciating, and the patient was in a state of collapse, with a weak, soft, and scarcely perceptible pulse of 35. I administered a dose of 30 grains of chloral, and left. Next day I found that he had fallen asleep in ten minutes—had slept for eight hours, had occasionally then for two or three hours experienced a sharp, cutting, tearing pain, low down, in front of the abdomen. Next week I was gratified by the man coming and showing me two small calculi he had passed.

In young children I should prefer it to chloroform in reducing dislocations, but since chloral came into use I have not had a chance.

It promises to be of immense value in parturition, especially in rigidity of the os and perineum, and where the uterine action is of a spasmodic kind. A good fair dose would act as a shock, and set things to rights. I have used it in several cases of perfectly natural labour, and the mothers expressed their gratitude. During the interval of pains, they went fast asleep. The sleep was sound, placid, and free, and not so disagreeable and troublesome as that produced by chloroform, and infinitely more useful to the country practitioner, who cannot always have an assistant by his side. When the pains came on they were more vigorous and direct. The parts seemed to give way with greater freedom than usual, and the mother was only half roused. When the case was over, they declared that they had not been to sleep at all, but knew everything that was going on. This may have been the case, as they only got 15-grain doses every forty minutes or so, but they lay perfectly still and seemed to enjoy it. I have now had more than a year's experience of it in this way, and feel quite at home in using it—much more so than ever I did with chloroform. There is no more hæmorrhage than usual, if so much.

In functional diseases of the heart, depending on improper action of the nerves or dyspepsia, I should think from its physiological action it would prove useful, but I have had no case to try it with. In spasmodic asthma it gives great relief, and, if a sufficiently large dose is given, it will check the spasm in a very short time. One would think it would be contraindicated in constipation, but if the constipation depends on muscular spasm from irritation, then chloral has a very beneficial effect, and favours regularity of the bowels. In engorgement of the viscera, it might be of benefit by producing a determination to the surface, but I think we have more powerful and trustworthy remedies for these ailments. In pneumonia, and nephritis with the symptoms of uræmia, I fear its use would be followed by very unwished-for results, but I have no experience of it in such cases.

In white softening of the brain, in ulcerated cornea, and some skin diseases depending on malnutrition, its action would be somewhat catalytic, and would produce no favourable result unless the appropriate kinds of food were given. The chloral would help them to be determined to the diseased parts, by being given in small and frequently-repeated doses.

In delirium tremens it would seem almost to be a specific, and in chloral the long-dreaded tetanus seems to have met its match; and if they have not hitherto fought fair, it is, to use a pugilistic phrase, only because the seconds have not been aware of "the rules of the ring."

In acute mania it has proved a great boon, and can be used when most other narcotics are contraindicated. In two cases I have used it, and the patients and their attendants have enjoyed a rest varying from four to ten hours.

Things new are often objected to, sometimes from no reason whatever, and parties often lay their dictum against an innovation because in their own secret souls they feel disappointed they were not the first to bring the stranger—to use a ball-room simile—"on the boards;" and chloral, having been well introduced, and having at once taken a position, many were the heads that with jealous eye saw the illustrious stranger in full swing with the fairest of the dames. Many were the objections raised—some real, some fancied. Before, however, I mention the objections, let me state the appearances produced by an overdose, and those seen *post mortem*. When the dose has been too large, complete anæsthesia—that is, insensibility to all external objects—is sooner or later produced, pallor of the face, upturning of the eyes, loss of pulse, coldness and rigidity of the extremities, with slow and stertorous breathing, symptoms similar to those seen in chloroform narcosis and alcoholic toxæmia. The principal and only appearance attributable to chloral seen after death are redness and congestion of the cerebral membranes and mucous membrane of the stomach. Let me also indicate, that from its known action it should not be given in organic heart-diseases, in hæmoptysis, in hæmatemesis, in hæmorrhagia, or in any uterine disease where hæmorrhage is a constant symptom, in severe inflammatory affections of the bowels, kidneys, liver, stomach, or lungs. The general statement, that where hæmorrhage is a constant symptom chloral is contraindicated, must be received with some qualification. If hæmorrhage be the result of depresssd nerve force, and not organic disease, then small and frequently-repeated doses will have a beneficial effect in arresting the hæmorrhage. In making these exceptions, we at once get clear of a great many of the objections. The remainder are easily answered. One good objection is said to be its uncertainty of action. I am confident that when the exact dose for each individual case is attained, this objection will vanish, especially when we bear in mind that when conjoined with other narcotics its action is more certain. It is said sometimes to cause fearful dreams. Increase the dose, and set the whole of the faculties to sleep, and the sleep will be quiet and placid. Another objection is, that when given to maniacal persons, though sleep is produced, they waken up in the morning as maniacal as ever. Well, this is a serious objection, one would think; but when we remember that chloral does not cure organic lesions, its result in such cases is not to be wondered at. In virtue of its power of co-ordinating nerve force, we must only expect it to be of radical use where functional disorders obtain. But, although it does not cure organic lesions, or eradicate malformations—what drug does, *per se*? —it gives the patient a sound night's sleep, during which period the mental and physical powers regain lost energy and substance, the attendants get their rest, and no bad effects, with rare and easily-determined exceptions, are produced. If it is too pungent, and is rejected, more freely dilute it. It is said to produce flushing of the face and urticaria. If the bowels are well regulated with a daily aperient this will soon disappear. If it does not produce sleep, or has no power on spasmodic ailments, then increase the dose. If a large dose does not produce sleep in a free liver, give a purge, and combine it with another narcotic. It is said to produce inflammation of the stomach, evidenced by gastric pain and faintness; then dilute freely, and give it on a full stomach. In relaxed condition it is said to favour hæmorrhage; then don't give it. Pregnant women have complained to me that after the dose the movements of the fœtus became very violent and unbearable. I have learned in those cases, where necessary, to give other narcotics. One very serious objection to the use of chloral, however—and it is the last I shall mention—is, that in enfeebled subjects it is apt to produce too prolonged a sleep, when the natural feeding times are passed over. This, coupled with its known action on the cardiac ganglia, may lead to fatal exhaustion, and when we add to this its power of decomposing the blood, as observed by Liebreich, Personne, Demarquay, Ralph, and Richardson, we may have an explanation of those few fatal results—happily but few—that have been recorded. I may remark, however, that if the anæsthesia is not great, the patients can be raised up, fed, and again laid down.

Much might be said of its dangers. These I have already incidentally indicated; but I may further mention, that as chloral is a cumulative medicine, its danger increases in the ratio of the increase and frequency of the dose, and leads to paralysis of the voluntary and involuntary muscles, as proved by the shakiness of the legs, and increased power of retaining the urine after a too large dose. Further, it does not follow that the more one takes the more he is able to take. There is no such tolerance produced with chloral. I believe the more one takes the less is the system able to withstand its toxæmic effects, and that by reason of its cumulative tendency.

In all my reading I have seen no case of suicide from chloral, and as it is likely to be rejected when taken hurriedly in a dose sufficient for the purpose, I should think that it is not a likely drug for such unphilosophic people. If it were not rejected, however, strychnia is said to be its antidote. This fact Liebreich discovered while observing its effects in cases of trismus. Unfortunately, the opposite does not hold good; for the direct therapeutical action of strychnia being much more rapid than that of chloral, when given poisonous doses, it kills before chloral can take effect, and, being an inorganic compound, is not likely to be detected in the tissues long after death.

Much more could be said in fewer words of this remarkable drug, but, as the common saying has it, the less one knows about a thing, the more they say about it. Such may be the case with me, yet I have been induced to say this much, because, if I said anything, I felt I could not say less. I made an abstract of all the cases recorded, but found it too extensive for our present meeting. My object is to draw from the members of this Association their experience of its use, and if, in the altered couplet of Pope—

> " While anxious doctors painful vigils keep,
> Sleepless themselves, to give to others sleep "—

I succeed in inducing any to use chloral, and for suffering humanity invoke "the friend of woe," my object will have been accomplished.

ARTICLE IV.—*Notes from Practice, New and Old.* By JOHN BALFOUR, L.R.C.S. Edin., I.G.

IN a former number of this Journal (June 1869) I gave a few cases illustrative of the value of sulphurous acid lotion in the treatment of contused wounds: extended experience has increased my faith in the application. It gives almost instant relief from pain, controls and greatly restrains suppurative action, and, when possible, secures primary union, perhaps as efficiently as carbolic acid. The lotion is of the strength of one in twelve, a thin rag (the thinner the better) is laid over the wound, and kept constantly wet for the first thirty-six to forty-eight hours. When cold becomes less agreeable, the lotion is used tepid, the rag wet every twelve hours, and covered with gutta-percha. When primary union is taking place, about the third or fourth day, a dressing of zinc ointment is to be substituted for the wash; this allows the skin to heal. When suppuration is established, a zinc lotion may be used after a week or ten days, and the cure wrought out on ordinary principles. The following abstracts of cases may be considered good specimens:—

S. B., a lad between 11 and 12 years of age, on the 8th June, in company with some other boys, was amusing himself with gunpowder—a "*peeoye*" (or devil) hung fire, and he poured some powder on it from the flask. This of course exploded, and tore open the metacarpal space between the thumb and forefinger of the right hand. The metacarpal bone of the thumb was fractured, and both wrists scorched. A mass of the short flexors of the thumb was forced out of the wound, contused, torn, and blackened. As this muscular substance was much injured, and could not be returned without using undue force, a good deal of it was cut off; the wound was washed out with the sulphurous acid lotion, covered with a rag wet with the same, and the fracture was kept in position by tying the thumb to the forefinger. Had a fair night's rest; the wrists (not complained of yesterday) now painful, and beginning to vesicate, dressed with carbolic acid and oil. Everything went on well: the burns on the wrist healed kindly, suppuration was most moderate, cicatrization rapid and perfect. I lately passed the boy into a public work, with a thumb very little, if at all, the worse of the accident.

C. D.—10*th June.*—Summoned to a young woman, reported to have had her hand seriously injured by machinery; found the first and ring fingers of the left hand much contused, with a considerable surface of skin abraded; the middle finger of same hand so much injured as to require amputation at the carpo-phalangeal joint. This was done under the influence of chloroform, and all the wounds dressed with the sulphurous acid wash. The stump healed without one drop of pus having been formed, and the other injuries did admirably.

Master D. E., on 29th July, was swinging on a rather high gate, fell over, and his forehead coming on a sharp stone, an irregular wound, about two inches in length, was the result. As there was much gaping, a stitch was required to bring the edges together, the wound having been previously well washed out with the sulphurous acid lotion; it was afterwards covered with a rag wet with the same. The whole healed by the first intention.

Snake-Bites.—The cobra or spectacled snake.—I observe that Dr Fayrer of Calcutta has been experimenting with the cobra in India, and appears to doubt the possibility of saving a case in which the venom was allowed to enter the circulation. I should think many a medical man in India might have given cases to prove the opposite; but as no one appears to have done so, I beg to submit two in which the men recovered, and in which there could be no doubt that the cobra was the snake which inflicted the injury.

Both occurred during my residence at Bareilly in Rohilkund—the first in a prisoner who was employed in re-tiling the house of Vincent Tregear, Esq., Principal of the Bareilly College. In removing the tiles, the man was bit by a small cobra. Mr Tregear was at once called, and gave him a full dose of liquor ammoniæ, and then despatched him to my house, which he reached probably in three minutes. The ammonia was at once repeated, and continued every two or three minutes with increasing intervals, the man being walked up and down between two others. The snake was killed, bottled, and long kept by Mr Tregear, and was an undoubted cobra. The second case occurred still nearer home. My friend, E. M. Wylly, Esq., B.C.S., shared my bungalow; his khansamah (or butler) was an oldish man, who, like many natives, kept a pet parrot in a small iron cage. Rising at early dawn one morning, according to custom, he was removing his pet into the open air, and did not observe that a pretty large cobra had during the night entered the cage, swallowed the feathered favourite, and been trapped by its undigested body when he would have retired. Of course, the head and anterior part of the snake's body could pass out between the bars of the cage, and so the poor old man was bitten about the wrist. I was dressing at the time this occurred, and in less than half a minute had the patient in my verandah, with a full dose of ammonia over his throat; and then he was kept walking up and down between two men, getting further supplies of ammonia every two or three minutes. In half an hour I was able to proceed on my rounds and leave the patient in charge of a native doctor; and in an hour or so he was safe. Next day he was at work as usual, only complaining of a very sore throat from the strength of the ammonia he had swallowed.

Of course there must be no delay in the administration of the remedy. I once lost a case in which probably not more than five minutes had elapsed from the time the bite was inflicted; but in that short time the patient had become unable to swallow. It is also very probable that Professor Halford's (of Melbourne) method of injecting the ammonia into a vein may be more certain than the plan of giving by the mouth, and it may give a chance even after the power of deglutition is lost.

Vaccination.—How I wish I could transport some of our vaccinophobists to India, and show them the suffering mortality there caused by smallpox among an unprotected population, and also the confidence and safety with which all who have been properly vaccinated can go through the midst of the pestilence. The following anecdote may be interesting:—While civil surgeon of Bareilly I had five vaccinators under me. These had, previous to my advent, been employed in the city itself only; but being desirous of extending their operations, I retained two only for the city, and sent the three others to large towns in the district, giving them letters to the darogahs (or chief officials) requesting them to assist the men. One of them was providentially a European, and he rather surprised me by writing in a short time that the natives were in a great ferment about the vaccinator, that women and children rushed out into the jungle as soon as his advent was reported, and that the prevailing opinion was that the Europeans were doing "Jadoo" (witchcraft), drawing blood from the children's arms that we might be successful in the war then going on (the first Sikkh campaign). I of course recalled my vaccinators at once, and thought that was the end of the affair. Not it. There was a serious epidemic of smallpox that season. In that village almost no young child escaped, and the mortality was awful. But a few children who had been vaccinated (almost by force, I believe) continued well, though mingling with the diseased around them. This astonished the natives, and at *their own request* I next year sent out my vaccinator among them, and continued to do so with success as long as I remained in the district.

ARTICLE V.—*Case of Sudden Death from an Aneurism of the Arch bursting into the Pericardium.* By HENRY A. LEDIARD, M.B., M.R.C.S.

JANET M., aged 60, lodging-house keeper, came under observation at the end of March 1871. For the last month or two she has been troubled with a cough, accompanied with slight spit. Two or three weeks ago she first began to feel a choking in the throat, together with occasional fits of difficulty of breathing.

The following facts were noted:—Expression anxious, left pupil larger than the right, some visible pulsation at the root of the neck; a distinct, though slight, heaving felt over the upper part of the sternum. Over the heaving area a systolic bruit is heard, which is most audible at the left edge of the sternum, on a level with the first costal cartilage. Percussion over the upper part of the sternum is dull; percussion under the clavicles is normal. The jugulars are distended, especially on the right side; they do not fill from below. The radials are hard and tortuous, and do not beat synchronously. The first sound at the apex is normal, and the second sound is heard with some accentuation. No rheumatic pains complained of. The cough is somewhat husky and not urgent; occasional fits of dyspnœa complained of, together with a soreness in the throat, which is referred to the box of the larynx.

She remained under observation for ten days, during which time nothing further was noted; she was not seen again until a week before her death. The last notes taken before death were as follows:—There is almost complete aphonia; a well-marked heaving is seen over the whole of the upper part of the sternum; there is a loud systolic murmur and absolute dulness over the heaving area; great dyspnœa. When first seen it was considered highly probable that she was the subject of aneurism of the arch, and when seen again, just before her death, this diagnosis was rendered tolerably certain. About the middle of September, she fell down dead in the street. This termination to the case *only* served to corroborate the diagnosis; the aneurism must have ruptured.

On post-mortem examination, a large aneurism of the ascending and transverse portions of the arch was found; it had ruptured into the pericardium at the point of reflexion of that membrane from the ascending part of the arch; the orifice was about the size of a split pea. In the pericardium were six or eight ounces of recent blood-clot, together with a proportionate quantity of bloody serum.

There was a small amount of decolorized fibrine within the aneurismal sac, which was scarcely adherent to its walls. The anterior wall of the tumour was attached to the upper portion of the sternum, the left carotid artery being obliterated. The heart was slightly hypertrophied; aortic valves competent. A cast was taken of the interior of the aneurism, which measured ten inches in circumference at its widest part.

ARTICLE VI.—*A few words on Vaccination and Revaccination.* By F. PAGE ATKINSON, M.D., etc., late Surgeon St Bartholomew's Hospital, Chatham, and Royal South London Dispensary.

THE following notes, regarding vaccination and revaccination, have been put together for the purpose of showing how false many of the prevailing ideas on the subject are, and saving time and trouble to those who are engaged in trying to find out the real truth regarding it.

It appears now to be fully acknowledged by medical men—

1. That vaccination, though it greatly lessens the susceptibility of taking smallpox, does not render the reception of it in after years altogether impossible.
2. That vaccination in most cases greatly modifies the character of the smallpox eruption, and lessens the severity of the attack.
3. That revaccination gives an absolute (?) immunity from smallpox.

The reasons for their coming to these conclusions are as clear as they possibly can be, and there cannot be the smallest allowance made for people who wilfully oppose such arguments as the following:—

Dr A. C. C. De Renzy, Sanitary Commissioner in the Punjab, says, "In this province, with a population of 18,000,000, the deaths from smallpox are never less than 20,000 a year. In 1869 they numbered 53,195." In England the annual average mortality does not exceed 5000, though previous to the introduction of vaccination it was quite as high as in the Punjab.

The facts, again, concerning vaccination in Scotland and Ireland, supplied to Dr Anstie by Dr Seaton of the Privy Council, speak for themselves as plainly as facts possibly can do.

In the former country it appears there was no Vaccination Act prior to 1863, and the average yearly deaths from smallpox in the twelve years 1853–64 were 1054. In 1865, '66, '67, '68 they were respectively 175, 200, 124, and 25.

In Ireland vaccination was not compulsory before 1863, and in the periods 1830–40, 1840–50, and 1850–60, the respective annual average mortalities were 5800, 3827, and 1272. In the years 1864, '65, '66, '67, '68 they were respectively 854, 347, 187, 20, and 19. In the first quarter of 1869, again, there were only 3 deaths, and in the second, none. Let any one who is sceptical as regards the advantages to be derived from vaccination pass in review the valuable evidence of Mr Marson, at the Smallpox Hospital (London). In 5000 cases of post-vaccinal smallpox, under observation from 1836 to 1855, it appears there were—

35 per cent. of deaths among those that were unvaccinated;
25·57 among those that stated they had been vaccinated, but exhibited no cicatrix.

Among those that had

1 cicatrix, the number of deaths per cent. was	7·73
2 cicatrices, ...	4·70
3 do., ...	1·95
4 or more, ...	0·55

The percentage of deaths among those that had well-marked cicatrices was 2·52, and 8·82 among those that had badly-marked cicatrices. Among those that had had smallpox previously it was 19.

In Pinchbeck, Lincolnshire, with a population of about 3000 inhabitants, only one death has occurred from smallpox during the last thirty years, and this was in the case of an unvaccinated person. The medical officer of the district has three times received the government grant for efficient vaccination. Dr Seaton, in his evidence before the Select Committee, stated that vaccination had the effect of reducing the mortality of children under five years of age. In Scotland the infantile mortality has been reduced from 70 or 80 per cent. to 55. In Greenock the mortality under five years of age has been reduced to 36 per cent., and in Glasgow to 28 per cent.

In the *Lancet* of 8th April 1871, the following statement occurred:—"Not a single revaccinated case has been admitted into the Smallpox Hospital at Homerton, and no death of a vaccinated person has occurred under 17." "This," as the editor remarked, "shows the protective power of *even imperfect* vaccination up to puberty, and the necessity for revaccination at this time."

The strongest case one can advance in support of revaccination is the fact that not a single nurse has died at the Smallpox Hospital for the last thirty years, in spite of the infection to which they are constantly exposed. As regards the lymph fit for the purpose of vaccination a good deal of doubt seems to exist. Some say that carefully-selected matter from revaccinated cases is as sure in its effects as that taken from primary vesicles; others, that secondary vaccine matter is of very little use, and that only that taken from the arms of infants should be used; while others assert that the lymph taken from children has become deteriorated by passing through so many different systems, and that a fresh supply should be obtained from the original source. Now, with regard to the use of secondary matter, there can be no doubt that it is capable of setting up the same stitutional disturbance, and producing the same kind of vesicles, as taken from primary cases; but still it not unfrequently happens that the vesicles are unduly hastened or otherwise irregular in their development. And from a review of the facts mentioned in the *Lancet*, 29th July 1871, by Dr Barbour of the Stockwell Fever Hospital, I would say that the amount of protection to be gained from its use is very small, and that it should only be employed under very exceptional circumstances. Where none other for the time being can be obtained, and revaccination is imperatively demanded, Bryce's test should certainly be employed in order to see whether it has efficiently performed the purpose for which it was intended or not; in other words, lymph should be again inserted into the arm a few days after the first vaccination. If both vesicles maturate, and also die away at the same time, then the first operation may be considered to have produced the desired effect; but if the second vesicle goes through all the stages of the primary vesicle, then the first operation has been a mere local affection, and has really exercised no *protective* influence whatever. The following case occurred in my own experience:—A lady who had apparently been successfully vaccinated with secondary lymph, was one month subsequently revaccinated with primary. The resulting vesicles were as perfect in every respect, and went through exactly the same course, as those occurring from a regular primary vaccination. This was a proof, then, that the first operation produced a local effect only, and that it was incapable of affording protection against the infection of smallpox. In answer to those who affirm that vaccine matter loses its effect by constant use, I would say, for the same reason, the poison of fever ought to become less virulent and infectious each succeeding year; but this is not the case, for though, owing to altered atmospheric influence, prevailing epidemics may for a time die out, they soon return when the conditions are again favourable, with all their former activity. But, in addition to this, let us see what opinion Jenner held upon the subject. After a careful watching of vaccination for upwards of twenty years or more, during which time lymph had been successively transferred from subject to subject, he came to the conclusion that it underwent no change whatever in its qualities. Marson, Ceely, and others also, whose experience is very great, have proved, so far as such matters admit of proof, that vaccine lymph does not lose any of its prophylactic power by a continued transit through successive subjects. When lymph degenerates in transmission, it is invariably due either to want of proper care in the selection of subjects, or to inattention to certain details essential to successful vaccination. But let us now, for one minute, consider the evidence of some of those who have experimented with lymph taken directly from the heifer.

During the seige of Paris, Dr Quinquand had all successful cases with the human lymph, but only one-third with heifers'.

Dr Thevenot, with calf-vaccine, had only 2 successful cases out of 21.

Of 32 surgeons in Paris who sent in their reports, one says that vaccine from the calf became better after passing through the systems of three or four different children, though bad and difficult to introduce for the first time. The rest (31) agree that vaccination from the calf was provokingly unsuccessful, succeeding at the very utmost only in a fourth of the children vaccinated directly, and much less from calf-virus tubes or glasses. Of 16 others who tried the calf-virus 13 failed completely.

Dr Gaillard, who succeeded 170 times out of 283 with calf-vaccine, was successful 2740 times out of 2856 with Jennerian vaccine.

The next question, about which some amount of uncertainty prevails, is as to whether syphilis and other diseases can be conveyed by vaccination. Mr Hutchinson has lately brought forward a series of cases to prove that syphilis is capable of being so conveyed; and, to say the least, they certainly appear to wear a very suspicious aspect. Still it must be remembered that, in 1857, Mr Simon (Medical Officer of the General Board of Health) addressed a series of questions upon this very subject to a large number of medical men, both in this and other countries, and received answers from no less than 539, with scarcely an exception, entirely in the negative. They declared that syphilis could not be conveyed by means of true vaccination; but they pointed out that, by gross carelessness, it might be inoculated *instead of* vaccine. The direct experiments, moreover, of Cullerier and others with mixtures of syphilitic matter and vaccine, and vaccine matter taken from persons suffering from constitutional syphilis, are most powerful arguments against the idea that syphilis is able to be transmitted by means of lymph taken out of a true Jennerian vesicle. To show that two poisons cannot be present in a true Jennerian vesicle, lymph may be taken from a vesicle developed in a person who has been vaccinated too late to prevent smallpox, and used without the slightest hesitation for vaccinating another child. It would certainly appear, from these facts, that vaccination as such cannot convey syphilis with it, though a syphilized lancet or blood taken up with lymph from a syphilitic infant may cause it to break out in persons subsequently operated upon. It might, nevertheless, be as well to do as Mr Hutchinson suggests—viz., to avoid taking lymph from first-born children, and take it only from second or later born children, in families of which the oldest has enjoyed good health. As regards the idea of scrofula being conveyed by vaccination, there can be no doubt, as the *Lancet* says, that "it is a mistake. Its development is, on the contrary, greatly prevented, inasmuch as smallpox, by weakening the system, was often the occasion of scrofulous and tubercular disease. Again, when skin eruptions are occasioned by vaccination, the fault is not necessarily with the matter, but with the constitution of the child vaccinated, which cannot bear even the slight disturbance of vaccination with impunity; and *a fortiori* cannot bear the destructive ance of smallpox, which is the almost certain alternative."

Among the instructions lately issued by the Lords of the Privy Council, are to be noticed the following:—

"Never take lymph from cases of revaccination. Never use or furnish lymph which has the slightest admixture of blood. Take lymph only from well-characterized, uninjured vesicles, at the stage (the day week after vaccination) when they are fully formed and plump, but there is no perceptible commencement of areola. Take lymph only, which, as it issues from the vesicle, is perfectly clear and transparent, and none which is at all thin and watery. Never squeeze or drain any vesicle. From such a vesicle as vaccination by puncture commonly produces, do not, under ordinary circumstances, take more lymph than will suffice for the immediate vaccination of five subjects, or for charging seven ivory points, or filling three capillary tubes; and from larger or smaller vesicles take only in proportion to their size. Be careful never to transfer blood from the subject you vaccinate to the subject from whom you take lymph. Note any case wherein the vaccine vesicle is unduly hastened, or otherwise irregular in its development; and if similar results occur in other cases vaccinated with the same lymph, desist at once from employing it. Change the lymph if on the day week after vaccination the vesicles are not entirely free from areolæ. Keep the lancets and other instruments used scrupulously clean, and do not use them for other surgical operations. Cleanse the instruments used thoroughly after one operation before proceeding to another.

"Except so far as any immediate danger of smallpox may require, vaccinate only subjects who are in good health. As regards infants, ascertain that there is not any febrile state, nor any irritation of the bowels, nor any unhealthy state of skin—especially no chafing or eczema behind the ears, or in the groin, or elsewhere in folds of skin. Do not, except of necessity, vaccinate in cases where there has been recent exposure to the infection of measles or scarlatina, nor where erysipelas is prevailing in or about the place of residence. Take lymph only from subjects who are in good health, and, as far as you can ascertain, of healthy parentage, preferring children whose families are known to you, and who have elder brothers or sisters of undoubted healthiness. Carefully examine as to skin disease and signs of hereditary syphilis."

There can be no doubt that the past epidemic has had the effect of causing several disputed points to be finally set at rest, and, among these, the question as to whether it was right to vaccinate women who were pregnant. The old idea was, that vaccine, being a poison similar to that of smallpox, would cause abortion to take place, but this has been contradicted by all the first obstetricians. Next it was thought unsafe to vaccinate children much under six weeks, whereas the medical officer of the Privy Council has distinctly advised that children who are exposed to the influence of the smallpox poison should be vaccinated within a week of their birth. It was also supposed to be dangerous to revaccinate elderly people, but this has been shown to be incorrect. There can be no question that grown-up people suffer, generally speaking, more from vaccination than children, the same as they do when attacked by measles, whooping-cough, etc., and this I believe has given rise to the idea of vaccination affecting people worse during what is termed a varioloid state of atmosphere.

The materials used for collecting lymph are—1. Ivory points. 2. Glasses. 3. Capillary tubes. The last-named are the best, inasmuch as the lymph is always kept in a fresh state.

The methods employed for vaccinating are—1. Puncturing. 2. Scratching. 3. Blistering.

The last-mentioned (introduced by Mr Ellis of London) is supposed to render the absorption of the lymph more certain, but it most undoubtedly entails a greater amount of trouble, and I cannot say from my own experience that it ensures a greater amount of success than either puncturing or scratching when carefully done. In a few instances, I have seen very bad arms result from this method. The effects produced by revaccination are not, generally speaking, the same as those which exhibit themselves after primary vaccination. As far as I can see myself, the effect of the vaccine manifests itself in three different ways:—

I. There may be a perfect vesicle passing through all the different stages, showing that the protective effects of the first vaccination have entirely passed away.

2. There may be a scab formed, but no *distinct* vesicle, showing that the protective effects of the first vaccination only partially remain.

3. There may be only slight redness produced, showing the protective effects of the first vaccination remain perfect, or nearly so.

In all cases, I think, where there is not a perfect vesicle, revaccination should be tried again, in order that the operation may not hereafter from carelessness fall into disrepute.

In order that the general public may learn the benefits resulting from vaccination and revaccination, all possible information should be afforded them on the subject, and medical men should be particularly anxious not to let any discredit fall upon the operation from a want of proper care. Once let the public be fully convinced of the fact that they cannot possibly receive harm from the inoculation of vaccine matter, and we may have the satisfaction of seeing smallpox in time banished from our shores.

In this paper extracts have been made from,—Edinburgh Medical Journal—British Medical Journal—Practitioner—Lancet—Macdowall's Medical and Surgical Aspects of the Siege of Paris—Marson on Smallpox and Vaccination—Instructions issued by the Privy Council.

ARTICLE VII.—*On Dementia.* By STRETHILL H. WRIGHT, M.D., Senior Assistant Physician, Royal Edinburgh Asylum, Morningside.

BY the term Dementia is understood the condition of one whose mental capacity, from any cause, is deteriorated from its normal standard. This mental impairment may vary in extent; it may be lasting or temporary.

I would shortly consider this state of dementia, dividing the disorder for the purpose into three varieties; and giving with the description of each variety a short summary of a case typical of the class to which it belongs.

The two principal divisions under which cases of dementia naturally resolve themselves are irrecoverable and recoverable—those in which there is no hope of the patient ever regaining the normal mental energy, and those in which the power of recovery is not lost.

As a good instance of the first form, irrecoverable or chronic dementia, I shall quote the leading features in the history of Mr H. This gentleman has been a patient in the Royal Edinburgh Asylum for the last twenty-one years. Before his admission he had been under treatment in other asylums.

The primary symptoms of mental disorder were those of great excitement; and he was placed in this Asylum, as his friends found it impossible to manage him at home on account of his violence of temper and imperiousness of manner. On admission he is reported as being almost in a state of fatuity. In a later report he is said to speak childishly, making a wrong use of words, such as did not express the meaning he evidently wished to convey. From that date, no change has taken place in this gentleman's condition: he is still an inmate of the Asylum, and his condition is fully described by likening him to a good but densely stupid boy. His appearance, considering his age (50), is very puerile; he is very easily managed, and, except an occasional pettishness, never gives any trouble whatsoever. This case, then, affords a very good example of the chronic dement. The bodily health is good, even robust; but the mental capacity is greatly deteriorated. The patient is a man, with the capacity of a child. He is easily amused, and is often as easily made irritable and peevish by the slightest annoyance or disappointment.

Little or nothing can be done medically for this state of mind. But under careful moral regulation and discipline, the irritability and proclivity to mischief, which many dements display, can be restrained; and the patient may lead a contented, happy, and, according to the measure of capacity which remains to him, even a useful life.

Intermediate between irrecoverable dementia, and that transitory impairment of mental capacity which, in greater or less intensity, results in the cessation of all attacks of mental excitement, is a form of dementia distinct from both, but forming a connecting link between them.

Frequently mental disorder depends upon the existence of bodily disease which tends to run a fatal course, and gradually to exhaust the resources of the constitution. In such cases, the first symptoms of mental derangement are of an acute character. The patient labours under acute mania or melancholy. Then, as the constitutional vigour is undermined by the progress of the bodily disease, the mental symptoms assume a more and more demented type. This form of dementia differs from typical chronic dementia by the nature of the transitory improvements which occur in the mental condition. When the bodily disorder remits, the mental powers rally. But it is with equal sharpness distinguished from "recoverable dementia," by the fact that these remedial efforts are merely transitory and abortive in their nature. A steady progressive advance from a state of dementia to mental competency is characteristic of the third form, "Recoverable dementia," alone.

Of this intermediate form, the case of Mrs S. affords an example. In this woman's case excitement supervened upon hæmorrhage after abortion, so severe as to induce syncope and great lowering of the general vitality. After a period of violent excitement she became demented, in which state her bodily condition is noted as "rather weak and infirm" Again, she is described as gaining strength, as being cheerful, and improved in her mental health. She is afterwards reported to have had fits of excitement at her menstrual periods; and finally to have become demented, in which state she died of phthisis pulmonalis. She was demented to the last.

In this case great mental excitement was produced in an exhausted constitution; to this a state of dementia succeeded. The constitution then made certain efforts at repair, giving results in the recovery of a certain amount of mental capacity. These efforts proved abortive from the constitutional tendency to wasting disease; and the patient's mind again sank into a state of irrecoverable dementia, in which she died.

Lastly, "Recoverable dementia" occurs as a stage in the progress of those cases where insanity does not depend upon constitutional disorders tending to progressive deterioration of structure, but upon specific disease which tends towards recovery.

Dementia of greater or less severity is so frequently a sequela in all cases of acute mental disorder, that it may almost be considered as constant.

The best examples of this "Recoverable dementia" are afforded by those cases in which insanity supervenes on acute bodily disease, or severe constitutional trial, as prolonged starvation, etc. Puerperal insanity is very constantly followed by a well-marked period of dementia, from which the patient emerges to a normal state of

In the following case, this is exemplified :—

B.'s was a case of puerperal insanity. In the course of her mental disorder and recovery from it, this patient displayed symptoms of depression, followed by excitement; she then sank into a state of dementia: in which condition she remained for some time, and from which she *gradually* emerged to the normal exercise of her faculties Her illness lasted ten weeks in all.

As in the case of the other tissues, after severe disease involving loss of substance, there is excessive irritability of the new formation, so in the brain, the display of great prolonged excitement. "Convalescent dements" are often very nervous and excitable. May it not be the case, that there is loss of substance or impairment in the quality of brain-substance formed during the acute stage, which, during the stage of dementia, is gradually replaced by material of the normal standard? It is certain that, as convalescence goes on, and progressive improvement is made in the general health, the mental powers gain strength and stability *pari passu*, and the irritability gradually disappears.

Finally, I would submit that—

"The mental" condition, "Dementia," may be naturally and usefully considered under three varieties.

That patients whose dementia belongs to the first variety have, so to speak, permanently assumed a lower stage in the mental scale. As they enjoy good bodily health, and the mental deficiency does not depend upon active constitutional disease, they are not so much subjects for medical treatment as for judicious moral discipline and control. That the treatment of cases belonging to the second variety is palliative; although by careful management the lives of such patients may be prolonged and their mental disorder ameliorated. And, finally, that in all attacks of acute mental disorder of any gravity, a stage of dementia is a constant stage towards recovery; and that the fact of a patient passing from a stage of acute mania or melancholia into a state of dementia, should be looked upon as rather a hopeful symptom than otherwise; as such a condition of the mental faculties is very constantly in such cases found to be precursory of the re-establishment of sanity.

ARTICLE VIII.—*On Atmospheric Influences.* By JOHN BOYD, M.D., Slamannan.

To gentlemen in town practice the state of the weather is usually only of subordinate importance. The physician's brougham, the *fiacre*, or the omnibus, not only aid locomotion, but protect the city practitioner from adverse skyey influences; while to him who trusteth in his own extensors, adductors, and gastrocnemii, the lee side of the street is open to his election. But to Gideon Gray the barometer and the vane are objects of no little consequence. The degree of atmospheric pressure and the direction of the wind practically decide whether the day is to be one of that tranquil yet vivid enjoyment attendant on brisk motion in genial air, or one of stern endurance, despite of the invaluable waterproof protections nowadays available, which were unknown when the father of the Surgeon's Daughter circulated around Middlemas, otherwise known as Selkirk. Yet considerations of greater magnitude than personal comfort are involved in the state of the weather. The observant and experienced medico very frequently finds that when he sets out in the early forenoon, the atmospheric portents inform him as to the condition in which he will find a large proportion of his patients. With a southerly wind and moist tepid temperature zymotic cases will spread; after a south-west storm and the equinoctial gales, an epidemic of good health will frequently break out; but the phenomena attendant on the east winds more particularly claim our attention.

The climate of Scotland, notwithstanding the progress of population and cultivation, may well be now described much in the same terms as Buchanan depicted it three centuries ago,[1]—gloomy and cloudy, with mild winters, rainy rather than snowy. The prevalence of south-west winds loaded with Atlantic vapours, and comparatively high in temperature, explain these clearly. An average of seven years, observed by Dr Meek, in the neighbourhood of Glasgow, gives—

Winds.	Days.
South-west, ...	174
North-west, ...	40
North-east, ...	104
South-east, ...	47

In January, March, April, and June, the north-east, generally termed the east, wind prevails; some years more continuously and uninterruptedly than others. From the beginning of December 1865 to the end of June 1866 there was scarcely a day's intermission from the cold, dry, piercing east wind, with bright sunshine during the day and frost at night. During that lengthened period the low temperature gave rise to many ailments—toothache, neuralgia of the fifth pair, lumbago, sciatica; as also to severe visceral inflammations. Pneumonia prevailed a good deal, and was highly acute and sthenic in character; but in nearly every case there was hepatic complication, fulness and tenderness in the right hypochondrium, duskiness of complexion, yellow-coated tongue, yellowness of the conjunctiva, amounting frequently to distinct jaundice; while the urine, high-coloured and turbid, high in specific gravity, stained the linen or cotton rag very unmistakably yellow. The colour of the fæces was sometimes pipeclay, at others blackish and greenish. I had previously noticed the coincidence—biliary

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m Scoticarum Historia, liber primus, cap. i.: "Aër rarò serenus, sed usa plærumque obscurus, ac hyeme satis miti magis pluvius, quam derangement with the east wind—but the long continuance of such atmospheric currents accompanying so invariably the phenomena referred to in that year, made it obvious that something more than coincidence existed. Ever since I have remarked, that when the wind is longer than three days in that direction cases present an imperative demand for the administration of cholagogues; and at no season more forcibly than last spring. The depressing influence of non-eliminated or insufficiently excreted bile on the mental faculties and spirits has long been known, and the jolly curative regimen, "lecto etiam et conclavi cultiore, lusu, joco, ludis, lasciviâ per quæ mens exhilaretur; ob quæ regius morbo dictus videtur," laid down in lib. iii. cap. xxiv. of Celsus, is not ignored by professional readers. But more than depression of spirits has been recognised as resulting from bile so retained, from the state of the weather—a peculiarly morose and unwholesome tone of the public mind—a tendency to harshness and severity, more especially distinguishable in those ranks of the population who are least likely to restrain their sentiments and emotions from considerations of fairness or social forbearance, and on whom a very decided improvement might reasonably be looked for, after being thirty years subjected to a well-regulated *compulsory* education. Even among the most cultivated classes such influences are observed occasionally to prevail; the bodily *malaise* warping the judgment as well as giving acidity to the feelings. The humane and philosophical Beccaria[1] recognises such conditions as possibly tending to pervert the very administration of public justice. With regard to the pathological appearances accompanying the symptoms referred to, I am unable to give any exact descriptions from my own observation. The only case where death occurred was an elderly female, who for several years became distinctly jaundiced whenever the east wind lasted a week; and here there were strong indications of malignant deposit on the liver. Permission to make a post-mortem examination was refused.

As to treatment, a few doses of calomel and rhubarb, followed by salines, in general sufficed to give relief to the sufferers; but fancying, latterly, that a tendency to rapid mercurialization was frequent, I gave full doses of podophylli resinæ, gr. j., c. ext. hyoscyami gr. j., in pills, which, repeated daily for two or three successive days, and followed when necessary by sulphas magnesiæ, answered admirably. The comparative bulkiness of chloridi ammoniæ renders it less eligible than the above pills, highly valued as it is in German practice. Nitric acid in infus. quassia vel calumbæ operated very satisfactorily afterwards as tonic cholagogues. For the sympathetic neuralgic maladies, I found in innumerable instances the hypodermic injection of ʒss. and upwards of liquor morphiæ hydrochloratis to give immediate, and often lasting, relief. In using Dr Wood's syringe and tube I found no advantage of a concentrated solution over the Pharmacopœia liquor; the former being apt to deposit, on standing, much of the morphia in a flocculent precipitate, while the amount of alcohol in the latter never gave rise to any inconvenience, even when applied to delicate females. The lively sensation of heat experienced after the injection seemed to bear a close relation to the anodyne effects that followed.

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[1] Dei Delitti e delle Pene, edizione sesto, p. 24: "Quindi veggiamo la sorte di un cittadino cambiarsi spesse volte nel passagio che fa a diverse Tribunali, e le vite de' miserabili essere la vittima dei falsi raziocinj, o *dell' attuale fermento degli umori d' un Giudice*," etc.

While discussing the above topic with a friend from the metropolis, of eminent ability and experience, he mentioned that, in addition to lumbago and sciatica, he had frequently met with a neuralgic affection of the calcaneum, which would only yield to treatment by attacking the liver.

ARTICLE IX.—*Case of Puerperal Scarlet Fever.* By JAMES YOUNG, M.D., F.A.S., Treas. Obs. Soc. Edin.

MRS G., æt. 25, was married on the 13th April 1870. She informs me that she has always enjoyed good health, and that her menstruation was regular until the last week of July 1870, when it ceased. A male child was born on the 16th April 1871. The labour, which lasted from 3 P.M. until 9.30 P.M., was natural and easy, with normal presentation. The child was well developed and healthy. On the 17th inst. the mother seemed quite well, and gave promise of a good recovery. On the morning of the 18th, Mrs G. was seized with a severe rigor, and on my visit I found her very feverish, and complaining of intense nausea and giddiness, with severe uterine pain, followed by complete suppression of the lochial discharge; pulse 100, and tongue furred. These symptoms continued until the next day (the 19th), when a scarlet eruption spread over her face and neck, rapidly extending over the body. Tongue somewhat red, the throat slightly inflamed, urine very scanty, intense thirst, total disinclination for food, pulse 130. The uterine pain continued for two days, but was relieved by the application of turpentine stupes. The treatment pursued at this stage was simple, and consisted of the occasional administration of mercurial purgatives, and moderately warm covering, with drachm doses of the aqua acetatis ammoniæ every three hours. The scarlet eruption was well developed for five days. On the 20th, the pulse rose to 136, and was feeble, the patient becoming somewhat incoherent. No application to the throat was necessary. The treatment was now considerably changed, and the usual dose of the tincture of the muriate of iron was commenced, and repeated every three hours. A large glass of claret was given four times day, beaf-tea and milk nearly *ad libitum;* chlorate of potash, scruple doses, with hydrochloric acid, in water, was given fre- ently as a drink. Brandy was substituted for the claret on the

26th, and half a glass was given in water every three hours till the 28th, when the pulse began to fall to 124. The patient made a slow but perfect recovery, being confined to bed until the 15th May, by which time she was able to sit up a little every day. Desquamation of the cuticle commenced on the 6th May. There was no dropsical effusion, and never any secretion of milk. She did not menstruate for three months after her recovery.

ARTICLE X.—*Clinical Lectures on Diseases of the Heart.* By GEORGE W. BALFOUR, M.D., F.R.C.P., Physician to the Royal Infirmary, Edinburgh.

I.—*On the Murmurs and other Physical Signs Distinctive of Mitral Stenosis.*

GENTLEMEN,—Were I to ask you to tell me what sign you suppose to be most distinctive of disease of the mitral valves, probably nine out of every ten would, without hesitation, reply, A systolic murmur loudest at the apex. Yet this, though the belief of a large proportion of medical men, is far from being the truth. A systolic apex murmur is by no means always a certain proof of any positive derangement of the cardiac mechanism. Such a murmur may, as you are aware, be of exocardiac origin, and the valves may in this case remain healthy, and their action perfect, in spite of the persistence of a murmur having the character described. It is even said that a murmur of this kind may be of endocardiac origin, and yet the valvular mechanism remain uninjured; and though such an occurrence must happen but rarely, still it is a possibility which we must never forget in estimating the probabilities in favour of our diagnosis. But systolic apex murmurs originating exocardially, or even endocardially, apart from valvular derangement, are not of course associated with regurgitation backwards into the auricle, and are free from any of the signs and symptoms dependent on that accident; yet, even though regurgitation be unequivocally proved to exist along with a systolic apex bruit, mitral disease or deformity is not therefore a necessary consequent, because both do occur in a not inconsiderable proportion of cases in which the mitral valve is nevertheless perfectly healthy. In fact, the mitral valve may be free from disease, and the auriculo-ventricular opening perfectly natural and undilated, and yet regurgitation may, and often does, take place. How this may be I shall take another opportunity of explaining; it is sufficient for the present to state the fact that, even where mitral regurgitation is clearly established, it is no positive proof of disease of the mitral valve; and I shall presently describe those signs which must coexist to prove this regurgitation to be certainly dependent upon disease of the valves. On the other hand, there is a murmur which is so invariably associated with disease of the mitral valve that, when once heard, it may be conclusively accepted as a distinctive proof of the existence of a permanent deformity, even though the murmur itself should subsequently disappear, as it frequently does. This murmur, which is pathognomonic of mitral stenosis, has been termed, *par excellence*, the presystolic murmur. It is well, however, to remember that this is a misnomer. As the term is, however, a convenient one, and has been long attached to this special murmur, it is perhaps right to continue its use, provided always we recollect that it is merely conventional, and not strictly accurate.

The history of the presystolic murmur commences with M. Fauvel, who, in 1843, not only described its characteristics, and amongst them its rhythm, but actually gave it the name by which it is still best known. British physicians are, however, mainly indebted for a clear understanding of this important murmur to the writings of Dr Gairdner, whose lucid statements and admirable diagrammatic representations were first published in 1861. In Edinburgh this murmur is of such frequent occurrence, so generally recognised, and the recognition verified every session by the discovery of the predicted pathological condition, that it is simply incomprehensible how its existence is still ignored by some even of the most esteemed members of our profession. Not, perhaps, that it is altogether ignored, though that sometimes happens—but its true character is denied, which is perhaps worse.

In estimating the nature of any murmur supposed to be of valvular origin, you are aware that it is absolutely necessary to be precise in ascertaining two facts regarding it: the first being the position on the cardiac area at which it is most distinctly heard, and the second its rhythm; that is, its proper relation to the several acts which constitute a cardiac pulsation. These points being determined, the ascertaining of the lesion upon which the murmur depends is a simple matter of ratiocination, in which it seems hardly possible to err. Now, the murmur I speak of has a fixed position in which it is most distinctly heard—viz., over what has been already described to you as the mitral area; that is, within a circle of about an inch, described round the point where the apex impinges as a centre. It is not much propagated in any direction, and though the educated and experienced ear can readily detect the alteration of the first sound produced by the presence of this murmur, wherever the heart-sounds can be heard, yet it is only over a very limited area that it is audible as a true murmur, being comparatively rarely to be heard above the third rib, while its distinct propagation is, as a rule, almost equally limited in every other direction. To give you some idea of this limitation of propagation, I may mention that there is now in the wards a lad of eighteen with a murmur of this character, so loud and rough that, on his first admission, it was distinctly recognised through three shirts (two of them flannel), a waistcoat, coat, and top-coat; yet this murmur, which I especially investigated to determine the area of propagation, is not audible as a murmur above the third rib, nor below the middle of the sixth interspace; nor farther to the left in the nipple line than a line descending perpendicularly from the anterior border of the axillary space; while on passing to the right it is already less rough at the left edge of the sternum, and is quite lost half an inch beyond its right edge.[1] But though I give this as an excellent illustration of the remarkable limitation of propagation, even in an exceedingly rough and loud presystolic murmur, you are not to conclude that this murmur is always limited to so small an area, because exceptions do occur, though these are certainly much rarer in regard to its propagation than in regard to its character. In accordance, therefore, with the laws of the propagation of murmurs already laid down, this position of audition, as we may term it, stamps this murmur as of mitral origin, and even hints its probable rhythm to the intelligent ear. The rhythm of a murmur is, as you are aware, its relation to the several physiological acts which constitute a complete cardiac pulsation—that is, which occupy the time comprised between two consecutive apex beats. During this period we have the ventricular systole, synchronous with the apex beat and the first sound; the ventricular diastole, synchronous with the second sound, and extending a little beyond it; the period of cardiac rest occupying almost all that remains of the soundless interval; and lastly, the systole of the auricles, which immediately precedes the ventricular systole running into it. In timing any murmur, therefore, we must take the greatest pains to discover whether it takes the place of either the first or the second sound, or if not, then we must ascertain what is the accurate relation of the murmur to these sounds, which of them it precedes, or which of them it follows, and at what interval. Now, in this matter there is this fallacy, that both first and second sounds are not always audible together at apex or base, as the case may be, either in health or disease; and when this is the case in disease, the murmur present is usually taken for the sound wanting. This is specially the case with the murmur of which I am at present speaking, for in the mitral region this murmur is not unfrequently followed by a single loud accentuated sound; and, accordingly, most students at once diagnose the case as one of mitral regurgitation (systolic bruit) with accentuated second sound. This state of affairs is by no means characteristic of the ordinary presystolic murmur, but it accompanies one form of it, of which I shall presently speak; and I mention it now, because the only means of correcting this erroneous diagnosis is to time both the murmur and the sound by placing our finger on the carotid artery, when the murmur will be found immediately to precede and to run up to the carotid pulse, with which the sound is distinctly synchronous. But we know that the carotid pulse is synchronous with the first sound of the heart, and precedes the second one; the sound that we hear is therefore the first sound of the heart, and as the bruit immediately precedes it and runs up to it, it occupies the time of the auricular systole; and inasmuch as the ventricular systole is the first portion of the heart's action giving rise to audible or tangible phenomena, and is usually called the heart's systole *par excellence*, so this murmur has been termed presystolic; but, as I have already said, this is a misnomer—it is truly systolic in rhythm and character—but the systole on which it depends is that of the auricles, and not that of the ventricles; it is an auriculo-systolic murmur. In timing this murmur it is obvious that we must employ the carotid and not the radial pulse; for while the former is always synchronous with the ventricular systole and apex beat, the latter is even in health always delayed to an appreciable extent—one-sixth of a second; while in disease, especially such as interferes with the arterial contractility, this delay is notably increased, and sometimes amounts to an entire cardiac pulsation. A reference to the radial pulse is thus always embarrassing, and may greatly mislead, but a reference to the carotid pulse is a perfectly safe guide, provided we ourselves have senses educated sufficiently to appreciate the teachings obtainable by comparing an audible with a tangible phenomenon. As, in a pretty considerable experience of clinical teaching, I have rarely seen any mistake made in doing this, the difficulties in its way must be but slight; such as they are, they are readily surmounted by the repeated examination in this manner of hearts which are either naturally slow, or have had their action artificially retarded.

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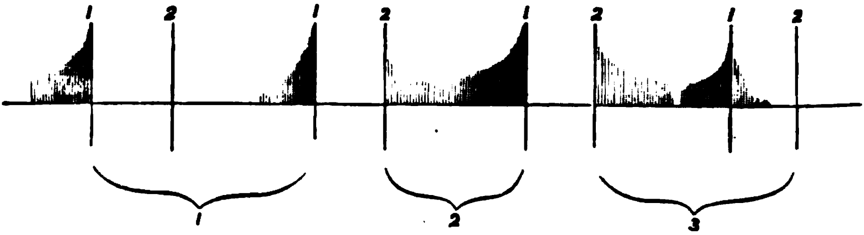
[1] W. C., Ward V.—The murmur in this case passed further to the right than usual. He has since died. His case will be detailed further on, where the reason for this will appear.

Much that is written as to the rarity or even non-existence of this peculiar murmur must surely be chargeable to inattention to this simple, efficient, and necessary diagnostic procedure. There are other murmurs besides this dependent upon mitral constriction, of which we shall presently speak; even this murmur is not always audible when its cause is present, still it is by no means unfrequent, and a due attention to the means described for ascertaining its rhythm and position of audition ought to leave no doubt as to its real character, and just as little as to its frequent occurrence. The peculiar position—in rhythm—of the presystolic murmur has given rise to an arbitrary regarding it as systolic or diastolic, according to the views of the observer. A simple reference to the carotid pulse is sufficient to correct this, and to prove as convincingly as anything sublunary can be proved, that this murmur is preceded by the long pause, and cannot therefore be diastolic, while it precedes both the apex beat and the short pause, and cannot therefore be systolic. With the term post-diastolic, which has been by some applied to this murmur, I have no sympathy whatever; it is an unmeaning expression of an assumed ignorance which does not really exist; for whatever murmur is neither diastolic nor systolic must of necessity be post-diastolic; but as it can hardly occur during the post-diastolic period of rest, when all the causes productive of murmur are in abeyance, it must occupy the time which every physiologist knows to be that of the contraction of the auricle, and is therefore of necessity auriculo-systolic. It is further a direct murmur, a murmur accompanying the onward current of the blood in its natural course through the heart, forcibly produced by muscular contraction. We shall presently see that there are other murmurs, especially of the mitral valve, direct as to the natural current of the blood, but having all the softness characteristic of an indirect or regurgitant murmur, because they are actually diastolic in rhythm and unaccompanied by forcible muscular contraction. This, however, is not the character of the true auriculo-systolic murmur; it is short, because it sharply coincides with the contraction of the auricles; it is also rough, because it is a direct murmur produced by forcible muscular contraction. It has been asserted by some that this loudness and roughness is entirely dependent on the amount of constriction or roughness of the upper surface of the valve; that neither this nor the directness of the murmur are the sole causes of the roughness is conclusively proved by the remarkable manner in which this murmur occasionally disappears, temporarily or permanently, the condition of the valve remaining the same. Something in this may be due to the constitution of the blood, and something also to the varying power of the heart's action; but that these are not all-sufficient is shown by the occasional rapid alterations in the degree of audibility of this murmur—alterations which, as well as the occasional variations in the production and conduction of other cardiac murmurs, are as yet wholly inexplicable.

Various combinations of vowels and consonants have been employed to represent, phonetically, the sounds of cardiac murmurs; and the simple murmur I now speak of is probably that which is most susceptible of being thus treated; the symbols *Rrrb*, or *Vōōt*, when vocalized, conveying to the ear sounds almost identical with those produced within the heart; nay, more, the varying accent with which they may be pronounced accurately represents the changes which are found in different murmurs, or in the same murmur at different times, the last consonant in each symbol being coincident with the apex beat.

Furthermore, sounds are only audible vibrations; and in many cases these are to be felt as well as heard; thus, the rattle of carriages along a street produces a preceptible tremor of the houses in it; and if we strike a tumbler sharply so as to produce a musical note, the vibrations causing this note are readily felt on placing a finger on the edge of the glass, and the sound ceases at once when we stop these vibrations; nay, the sounds produced by friction of the moistened finger along the edges of glasses partially filled with water are not only to be felt as vibrations, but may be seen in the crispation of the water within them. So in like manner the vibrations which give rise to cardiac murmurs may very frequently be felt by the finger at their point of origin; and as they are more readily felt the louder and rougher the murmur is, and as there are few murmurs, if any, so rough as this simple presystolic one, so it more frequently than any other gives rise to a distinct sensation of vibration which is to be felt over the mitral area, giving rise to what is termed the *frémissement cataire*, or purring tremor, rarely, if ever, absent in such cases, and equally with the audible phenomenon, which coincides with it and depends upon a common cause, remarkable for the striking manner in which it runs up to the apex beat and there ceases, which this tremor may be distinctly felt, just as the murmur is heard to do.

A murmur, then, presenting the characteristics just described, rough and capable of being vocalized by the sounds represented by the letters *Rrrb* or *Vōōt*, which is separated from the second sound by a more or less lengthened but always readily appreciable interval, which distinctly precedes the apex beat and the carotid pulse, usually running quite up to them, but occasionally separated from them by an extremely short though appreciable interval, whose rhythm may be thus graphically rendered (fig. 1), and which is (almost) invariably accompanied by a purring tremor over the mitral area, is invariably an evidence of mitral deformity, and is that to which alone is applicable the term, simple presystolic or auriculo-systolic. Once heard and recognised, we are sure that after death we shall find more or less constriction of the auriculo-ventricular opening, more or less deformity of the mitral valve; the murmur may disappear, but the lesion is permanent. The tendency of this murmur to disappear, temporarily or permanently, is in many cases somewhat remarkable, and has given rise to many unlucky *contretemps* not very creditable to practitioners of medicine. For instance—



CASE 1.—I well remember a case in which a patient with a disappearing presystolic murmur possessed quite a bundle of certificates from medical men, one half of which testified that he laboured under organic disease of the heart, while the other half certified, equally strongly, that he was altogether free from cardiac disease. He ultimately died, and the mitral valve was found to be deformed, the opening constricted, and the appendix of the left auricle filled with an organized clot. Of course in every such case there are

various subsidiary phenomena which tend to prove the persistence of the cardiac lesion, apart from the existence of a murmur; but of these I shall presently have to speak more at large; let this case be a warning to you, to pay more attention to those subsidiary phenomena, where you undertake to confirm or controvert the deliberate opinion of a competent medical man, and to avoid basing your opinion as to the existence of cardiac disease on the mere presence or absence of a murmur, either of which may sometimes mislead, though, as I have already said, such a murmur as that just described never does.

The condition of the valve usually, and so far as my own experience goes, invariably, associated with the murmur described, is that which has been termed the diaphragmatic valve, in which the two segments of the mitral are united and stretched like a diaphragm across the auriculo-ventricular opening; the valves themselves are thickened, especially at their edges; sometimes almost cartilaginous in character, their surface usually smooth, though occasionally their edges have a few small and frequently calcareous vegetations attached; the central opening may vary from a small buttonhole, into which the point of the little finger can scarcely be inserted, up to an opening not very much less than normal; in the latter case, however, if the murmur have been at all well marked, the vegetations will be found more numerous and larger than usual. Even where the murmur has been very loud, rough, and persistent, the valve is not therefore rougher or denser than usual; roughness of the murmur is quite independent of roughness of the valve, or even of any remarkable hypertrophy of the auricle, as is very well shown in the following case:—

Case 2.—Margaret Ross was an inmate of Ward XIII. for a whole year, labouring under general dropsy, depending on kidney disease (large white), for which she was repeatedly tapped, etc. What chiefly concerns us now is, that she had a persistent and well-marked rough presystolic bruit, accompanied by a thrill at the apex. On dissection her kidneys were found diseased as expected, her heart was somewhat enlarged, weighing 15 ounces, with milk spots on its anterior surface; the left ventricle was in a state of concentric hypertrophy, but besides this its walls were considerably thickened (this depending on the kidney disease); the segments of the mitral valve were united and thickened throughout, but chiefly at their margins; their surfaces were perfectly smooth, and on the edges of the opening, which was so contracted as only to admit the point of the middle finger, there were one or two minute vegetations; the cordæ tendinæ were contracted and matted together; the aortic valves were competent and natural; the right side of the heart apparently natural.

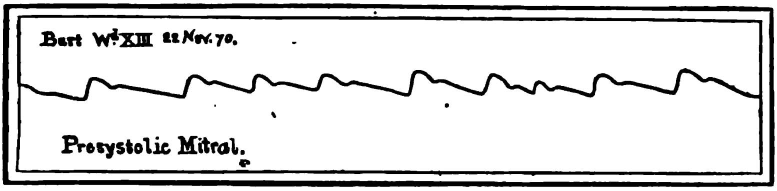
This was a very well marked case, in which the post-mortem phenomena fully confirmed the diagnosis during life, as, I may add, invariably occurs in similar cases.

CASE 3.—William Craig had a presystolic murmur so loud and rough that I have selected it as a measure of the extent to which such murmurs could be propagated. In mapping out the extent of his murmur, I found it to extend so much further to the right than usual that the thought struck me, Is it possible that we can have in this case not only a mitral but also a tricuspid stenosis? But I dismissed the idea as in the highest degree improbable, and referred the great propagation to the loudness and roughness of the mitral murmur. The result shows that in this I was mistaken, though unquestionably there were no other symptoms present but the excessive propagation which could countenance any other opinion. The patient was anæmic, and there were consequently no jugular throbbings present, and the increased transverse dulness of the heart could not of course be regarded as any definite sign of tricuspid stenosis. The patient died of latent pneumonia following, and apparently induced by scattered patches of pulmonary apoplexy, both of which were recognised during life. On opening the thorax, the enormous size of the right auricle at once attracted attention. It measured inside eight inches and a half in circumference by two and three-quarters vertically, and contained a large clot, half an ounce of which was decolorized; its walls were comparatively somewhat thickened, but irregularly so, varying in thickness from one line to a quarter of an inch. The musculi pectinati were singularly well developed. On looking down on the tricuspid valve from the auricular aspect, its segments were found matted together, and the opening so contracted as only to admit the point of the middle finger; the endocardium in its neighbourhood was slightly thickened; a few small vegetations were attached to the free margin of the valve. The right ventricle was slightly dilated; its walls not hypertrophied; the cordæ tendiniæ contracted; and no distinctive trace of the three segments of the valve were to be found. The left auricle was dilated so as to admit a ball two inches in diameter; its walls were not hypertrophied; its endocardium was thickened. The mitral valve from the auricular aspect scarcely admitted the tip of the little finger; its upper surface was covered by many calcareous spiculæ; its free margins beset by a few small vegetations. The left ventricle was apparently normal both as to its walls and cavity. The aortic and pulmonary valves were competent and healthy. The whole heart weighed nine ounces and a half. The rest of the dissection is omitted as unimportant for my present purpose. The boy's illness, according to his own statement, dated only a few months back. There was no history of rheumatism in either of these individuals.

Cases illustrative of this peculiar murmur and its accompanying lesion are of such common occurrence both in the wards and in the pathological theatre that no session passes in which you may not have repeated occasion to verify the statements made. I shall not therefore multiply them here, and shall also reserve statistical details till I come to treat of the relative frequency of the various forms of heart disease.

Of course, with a mitral valve deformed in this manner, closure of its segments is necessarily impossible, and regurgitation to a greater or less extent must of course be present, yet a systolic bruit is very frequently, as in the two cases related, entirely wanting, though occasionally, as I shall presently point out, the systolic bruit is the only one distinctly audible, while in yet a third series of cases both bruits are audible separated by the apex beat.

The pulse in this form of cardiac disease is weakened in proportion to the amount of stenosis present, and is more or less irregular, though not always markedly so, provided no pyrexia coexist; and the accompanying diagram may be accepted as a fair average graphical representation of its condition in such cases:—



But the murmur just described—though that which is certainly most characteristic of diaphragmatic mitral stenosis—is far from being the only one heard in such cases, and of the variously complicated murmurs which may be audible in such a state of the valves, the two following cases afford very striking illustrations:—

Case 4.—Mary Macmurray, aged 31, admitted into Ward XIII. on 26th May 1870, complaining of great pain across the chest, loss of appetite, and general debility. She stated that she had never been very robust, and had suffered from acute and subacute rheumatism on three separate occasions; the first of these attacks occurred nine years ago, the second seven, and the third three years ago. She also suffers almost constantly from chronic rheumatic pains of her limbs and chest. Towards the close of her first attack her head was affected. About ten months ago she began to get more feeble and lost her appetite, suffering also from severe pains in the precordial region, and since that time she has gradually got worse. Her urine was found to be albuminous, containing one-fourth of albumen, specific gravity 1016, acid, normal in quantity, and contained epithelial, granular, and hyaline casts. This kidney affection was her more serious ailment, and was that of which, indeed, she ultimately died; but, in relation to our present subject, her thoracic symptoms were by far the most interesting, and were as follows:—Her pulse was 104 and feeble, both radial pulses alike, and both pupils normal. The heart's apex beat behind the fifth rib, as ascertained by percussion, and two inches and a quarter to the left of the sternum. One inch from the left edge of the sternum the percussion sound was quite clear from the clavicle down to the upper edge of the second rib; from the upper edge of the second to that of the third rib, the sound on percussion was comparatively dull; and perfectly dull from the upper edge of the third rib to the lower edge of the fifth, where the tympanitic stomach sound came in. Along the upper edge of the fourth rib complete dulness extended for a distance of half an inch from the right edge of sternum to two inches and a quarter from its left edge, and comparative dulness for nearly one inch more. Along the lower edge of the second rib the dulness extended for a distance of two inches and three-quarters from the left edge of the sternum. In this dull portion between the second and third ribs on the left side, distinct pulsation is to be felt, less forcible, however, than that of the heart. On auscultating over the apex beat a distinct presystolic bruit was usually but not always audible; the systolic sound was observed roughened and occasionally replaced by a soft blowing murmur; the second sound is followed by a loud musical diastolic murmur. Between the second and third ribs on the right side the first sound was heard muffled, and there was considerable accentuation (sharpness) of the second sound, followed by a diastolic murmur. Between the second and third ribs on the left side close to the sternum, the second sound was more markedly accentuated, and the diastolic bruit more distinct: a little farther to the left the same sounds are heard, and a distinct sense of pulsation is conveyed to the ear by the stethoscope. The accentuation of the second sound and the diastolic bruit are, however, most distinct immediately behind the sternal edge of the second rib at the left side. Into the left subclavian the accentuation of the second sound was distinctly propagated, but not the bruit. Into the left carotid both sounds were propagated, but not distinctly; but into the right carotid and subclavian both sounds were distinctly propagated. On auscultating up the right edge of the sternum, the second sound and diastolic bruit were heard gradually to increase in loudness to the upper edge of the sternum, where it is joined by the first rib, but nowhere on the right do they attain the same loudness and distinctness as on the left. A slight humming murmur was occasionally audible in the veins. For the last month, the patient's urine became more scanty, uræmic vomiting and sickness were frequent, and she gradually sank, and died on the 21st December, the immediate cause of death being a pleuro-pneumonia absolutely latent, and entirely without any subjective symptoms whatever. Her cardiac symptoms remained unchanged. At the autopsy, on 23d December, the lower part of both the right and left lung were found to be hepatized, and were covered externally by a thin layer of perfectly recent lymph, presenting a honeycomb appearance. The left lung was slightly retracted, uncovering the heart to a greater degree than usual. The heart itself was purse-shaped and somewhat enlarged, its substance healthy; the aortic valves were competent, but its cusps were thickened and covered over their whole under surface by numerous vegetations; the mitral valve was thickened and contracted, scarcely admitting two fingers, and with some threads of recent lymph attached to its edge; the upper surface of the aortic segment of this valve was thickly studded with rough stumpy vegetations of varying size. The liver was healthy. The spleen weighed fifteen ounces, and on its posterior border had seven hæmorrhagic infarctions of a triangular shape, and varying from the size of a pea to that of a small bean (the results of embolism), otherwise it was healthy. The kidneys were slightly enlarged; the right weighed five, and the left six ounces. The cortical substance was lessened; the capsule natural, and when peeled off exposed a smooth organ. The intestines were congested, and the rectum and lower part of sigmoid flexure of the colon were thickened.

The next case is perhaps equally instructive, but wants the crucial decision of a post-mortem examination. I shall confine myself solely to the cardiac phenomena:—

Case 5.—J. H., aged 18, was sent up to Ward XIII. convalescent from typhus from the fever house on 6th June 1871. She states that two years ago she had a severe attack of rheumatism which affected all her joints, but not her chest, and lasted for four months. After her recovery she began to suffer from pains in her cardiac region, palpitation of her heart, and shortness of breath on going up stairs. Three months before her attack of typhus fever, from which she has just recovered, she first observed some degree of swelling of her feet. Since her fever the pains in her chest have been more severe, but she has no dyspnœa while lying still in bed. Her pulse is 84, rather small, steady and regular; there is a perceptible thrill over the apex of the heart. The longitudinal dulness of the heart is normal; its transverse dulness in the line of the fourth rib extends from the right edge of the sternum towards the left for a distance of three and a half inches. The apex beat is between the fifth and sixth ribs, three inches and a half from the left edge of the sternum. On auscultation over the apex beat a somewhat prolonged murmur is audible; the first portion of which is rough, and precedes the apex beat, while the latter and softer portion follows it. Between the second and third ribs on the right side there is a systolic murmur prolonged upwards, and followed by a normal though somewhat feeble second sound. Between the second and third ribs on the left side, close to the sternum, there is a systolic murmur, followed by a markedly accentuated second sound, which is immediately followed by a soft, blowing diastolic murmur. This diastolic murmur ceases to be audible at a distance of two inches and one-third from the left edge of the sternum along the second interspace. Descending from the third rib at one inch from the sternum, this diastolic murmur continues audible till about the middle of the fourth rib, after which it ceases to be heard, the presystolic and systolic murmurs being alone audible beneath this point. Over the sternum this diastolic murmur is only to be heard between the second interspace and the fourth rib. The systolic murmur is slightly propagated into the carotid arteries, as is also the aortic second sound which remains pure. During the progress of the case the ventricular systolic sound over the apex was frequently found absent, and the diastolic murmur at the base became more limited in its area. The patient was discharged improved on 12th August.

The murmurs in these two interesting cases differ considerably in some respects, and yet, if we analyze them, both cases will be found to belong to the same category—examples of which, though not very common, are yet by no means rare. And I shall first remark, that the systolic basic murmur on the right or aortic side of the sternum, in the second case, very probably depended on a similar roughened condition of the under side of the aortic semilunar valves, which was observed in Macmurray; that the murmur was not distinctly heard in her case (the first sound in that position was only muffled) is no proof to the contrary, as these anomalies constantly happen, but, on the other hand, it is also possible that it may have been propagated from the left side, in which case it belongs to quite a different category; at the same time, had this been its only source, it would scarcely have been propagated so distinctly into both carotids, at least we should not expect it to have been so. The first point having a direct bearing on the subject in hand—the diagnosis of mitral stenosis—is the occurrence in both of these cases of a diastolic murmur, loudest at the right edge of the sternum at the base of the heart. In H.'s case there could be no doubt as to the diastolic character of the soft blowing murmur; in Macmurray's case, her ordinary pulse of 104 was reduced by digitalis and the recumbent posture to 80 before I could positively satisfy myself that her musical murmur was truly diastolic.

The region of the pulmonary artery to which these murmurs belong, has been not inaptly termed the region of romance, because of the murmurs audible there, which have given rise to much speculation, and which nevertheless seem easily explicable. Laennec, it is well known, taught that the second sound was due to the contraction of the auricles; and Hope, though well aware of the production of the second sound by the closure of the semilunar valves, yet taught that "when the mitral valve is contracted, a murmur accompanies, and sometimes entirely supersedes, the second sound," the influence of Laennec's teaching helping no doubt to mar the excellence of his own observation. For the murmur of mitral stenosis never obscures the second sound, though it often, as in the cases just described, immediately follows it; sometimes, as in them, separated by an appreciable interval from the true presystolic murmur (fig. 3), at others including it and running right through the periods of diastole and rest up to the apex beat (fig. 2). In both classes the first portion of the murmur is distinctly soft and diastolic in character, while the latter portion has a rough and systolic character, the direction of the current of blood being the same during both, clearly showing the influence of muscular propulsion in roughening the murmur. In Macmurray's case there is positive proof that the condition of the pulmonary valves had nothing to do with the production of diastolic murmur; the absence of any symptoms of disease of the right heart, in the other case, coupled with the great rarity of disease of the pulmonary artery, and the comparative frequency of similar diastolic murmurs in other cases of mitral stenosis, make it most probable that this diastolic murmur in all of them depends upon the same cause. The appreciable interval which existed between the diastolic and presystolic murmurs, in both cases, makes it impossible that prolonged auricular contraction, encroaching on the periods of rest and ventricular diastole, could have been the cause of these diastolic murmurs; for, in the face of a continuously contracting auricle, no theory of the production of these murmurs could account for a soundless interval interposed between a soft and a rough bruit, though it might explain the gradual roughening of the bruit towards its close. On the contrary, if we suppose two different causes acting in different directions to be at work in the production of these bruits, we have an efficient explanation of the difference in their character; and if we further suppose these causes to be separated by an interval, in the normal condition of the heart, we have also an efficient explanation of the pause which is occasionally interposed between the soft and the rough bruit, and we can also perceive a very plausible reason for the occasional absence of this pause. For it must be evident, that the more nearly the mechanism of the heart approaches the normal, so much the more closely will the physiological phenomena approximate those in health. The presence or absence of an appreciable pause in anormal conditions will therefore be a measure of the amount of anormality existing—a measure of the obstacle to the onward flow of the blood, of the degree of contraction present.

If we take an india-rubber bag-syringe, and, after emptying it of air, insert its nozzle into water, it will be found to fill with a rapidity proportioned to the size of the opening in its nozzle, into which, if any particle of dirt get, the bag either fills more slowly, or, if the opening be quite stopped, it ceases to fill or to dilate at all. So it is with the heart; in the normal condition of the auriculo-ventricular valves the diastole is completed at once—the blood not so much flowing freely into the ventricles, as closely following in a liquid mass the recession of their walls, for of course there is in the heart no vacuous cavity or air-filled space into which the blood can be, strictly speaking, said to flow. During the period of rest, the blood continues to pass into the heart, till the auricles, becoming stimulated by the distention, contract upon their contents, which they force into the already full ventricles—thus supplying to them that stimulus of distention necessary to induce their contraction in its turn; and the comparative tenuity of the auricular walls exists probably quite as much because of the necessity there is that the cardiac contraction should commence there, as because of the auricles having less work to do. When, however, from any cause the auriculo-ventricular opening is narrowed, it is certain that the diastole must be prolonged, and this prolongation of the diastole must increase according to the amount of mitral stenosis present, until it not only encroaches on the period of rest, but may even occupy the whole of it, the ventricle filling so slowly that the stimulus of distention is felt by the auricle before the ventricular diastole is perfectly concluded. Under these circumstances, if the right cavities be relatively proportional, even though not quite normal, and the mitral stenosis considerable, the stimulus of distention may be more speedily produced on the right side than the left, and as the result of that we have a want of synchronism in their action, and a consequent want of synchronism in the closure of the aortic and pulmonary semilunar valves, and hence reduplication of the second sound—a phenomenon of such frequent occurrence in the history of mitral stenosis as to be of considerable importance in the diagnosis of obscure cases, being in many of these a tolerably permanent and by no means a casual or unfrequent occurrence. The flow of blood through the contracted valve in such cases of prolonged diastole may be altogether soundless, or it may be accompanied by a murmur which may be musical, as in Macmurray's case, or non-musical, as in H.'s case, but in all it is of a soft, blowing, diastolic character, and presents none of the roughness of the auriculo-systolic murmur, in which it not unfrequently terminates, and this notwithstanding that both are equally direct murmurs so far as the current of the blood is concerned. It seems probable that the musical character of the murmur in Macmurray's case was produced by the vibrations of the rough, stumpy vegetation covering the upper surface of the aortic segment of the mitral valve; it seems equally probable, however, that in many cases a distinctly humming, though perhaps less distinctly musical, character may be given to the murmur merely by the peculiar state of tension of the valve itself.

You will observe that, as in the normal condition of the heart there is a pause between the ventricular diastole and the auricular systole, so, the more closely the diseased heart approaches to the normal one, the more likely we are to have a pause between the diastolic and auriculo-systolic murmur, while the absence of any pause is, according to the view now taken, only a proof of the great amount of stenosis present; and you will observe that Macmurray's heart bears out this view, inasmuch as the pause was distinctly marked in her, while the opening in the mitral valve actually admitted two fingers, which indicates a by no means great amount of contraction. You will also observe, that this explanation of the production of a prolonged presystolic murmur is not only consistent with what we know of the physiological action of the heart, but also with the character of the sounds heard, while it also does away with all the difficulties in the way of explaining reduplication of the second sound, as also those still greater difficulties of explaining how or when an auricle is to be filled, if we imagine that a bruit, occupying as it frequently does the whole of the diastole and rest, is produced by continuous auricular contraction.[1]

Bruits such as these may be graphically represented by the second and third illustrations in diagram 1, the first exhibiting them when they are continuous, the second when, as in the two related, they are not, part of the shading to the right of the centre being omitted to represent the pause. Phonetically they may be vocalized by *rrrrrb*, or, when softer and more musical, by *roo-oo-oo-oo-b*, and when we have reduplication of the second sound by *roo-oo-oo-oob-ta-ta*.

The systolic bruit audible in the pulmonary region has nothing to do with mitral stenosis; in the cases related it partly depended on mitral regurgitation, but it is also heard where no regurgitation is present. I shall describe its mechanism in both of these instances on another occasion.

It is very well known that a constricted mitral valve is not always diaphragmatic in character, but is occasionally funnel-shaped, the opening being at the apex of the cone which dips into the ventricle. I have no dissections of such cases to relate, but have occasionally had cases which presented characteristics which I conceived to be due to this form of valve—these are prolongations of the murmur, followed by a loud and accentuated first sound. It is such cases which are so apt to be mistaken at first hearing for a systolic murmur with an accentuated second sound; a reference to the carotid pulse at once corrects this misconception. The murmur in this case is aptly vocalized by the sounds *roo-oo-oo-lúp*, and the perfect closure of the valve has seemed to me readily explicable by the ease with which the sides of a long and somewhat loose valve, with a small opening, may be collapsed one upon the other.

Such, then, are the murmurs specially distinctive of mitral stenosis; I shall subsequently take up the physical signs diagnostic of this affection when no murmur, or when only a systolic one, is present. The mere addition of an apex systolic murmur to those described as distinctive of mitral stenosis in no way affects the diagnosis, and its consideration is therefore for the present omitted.

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[1] Macmurray's case has already been commented on in relation to the diagnosis of substernal aneurism, at p. 709 of this Journal for Feb. 1871. The occasional absence of the presystolic portion of the murmur in her case, gives it a very striking resemblance to that of Harriet H. (case 67), in Dr Hilton Fagge's interesting paper on the Murmurs attendant on Mitral Contraction, at p. 326 of Guy's Hospital Reports, vol. xvi. 1871.

(To be continued.)

Part Second.

REVIEWS.

The Action of Neurotic Medicines in Insanity. By T. S. CLOUSTON, M.D., Medical Superintendent of the Cumberland and Westmoreland Asylum, Carlisle. The Fothergillian Prize Essay for 1870. London: 1871.

AN accusation has been made against medical superintendents of asylums that they are not doing the amount of scientific work which might be expected from them, and that they are becoming mere administrators, stewards, and secretaries to the large establishments over which they preside. We have an uneasy feeling that this accusation contains a certain amount of truth. There is no doubt that it is safer for a medical superintendent to neglect his medical duties than any other of his multifarious avocations. Let him be mighty in small details, keep his accounts and registers in good order, not ask too much from the District Board, nor have too little furniture and fittings for the General Board of Lunacy, and he is at least out of the range of censure. There is much to draw him away from pathology and medicine, and little to bring him back to them.

Much good is done and much care lavished in a quiet, unobtrusive way by those in charge of such establishments, but this is not readily appreciated by the public; and it is therefore not without satisfaction that we point to the essay under review, as well as the able volume of West Riding Reports, edited by Dr J. H. Browne, as proofs that medical superintendents of asylums are still adding something to our knowledge of the treatment and pathology of nervous diseases.

If further evidence were needed, Dr Clouston's experiments fairly prove the prejudicial effect of opium in most forms of insanity. It was found to diminish the appetite, to lower the pulse, and to cause the patients to fall in weight, while it only allayed the excitement when given in large doses, and soon lost its effect. Nevertheless, it seems to us that people nowadays are rather too fond of accusing medicines of taking away their appetite. In our own experience, hyoscyamus has no such effect, though Dr Clouston assumes the contrary.

"It was one of the effects," writes Dr Clouston, "of Indian hemp, specially mentioned by O'Shaughnessy in his first experiment with the drug, that it caused an increase of appetite; and I found that when giving the bromide of potassium to my epileptic patients, it increased their appetites. Certainly no sedative or narcotine drug that I have ever used in large doses in the case of maniacal patients affected their appetites so little as the two given together. In doses under a drachm of each, I never saw any diminution of appetite at all, and in large doses it was only after a long time that I found the appetite sometimes lessened."

The most remarkable observation made by Dr Clouston in this essay may be stated in his own words, p. 35:—

"3. A mixture of one drachm of bromide of potassium, with one drachm of the tincture of cannabis Indica, is more powerful to allay such excitement than any of the other drugs or stimulants tried. It is more uniform and certain in its effects, more lasting, interferes less with the appetite; and to produce the same effect the dose does not require to be increased after long-continued use."

"6. Bromide of potassium alone can subdue the most violent maniacal excitement, but only when given in immense and dangerous quantities; and its effects are so cumulative while so given, that after they have once begun to appear, they increase for days after the medicine has been stopped, almost paralyzing the cerebrum and sympathetic."

"7. To produce sleep in mild excitement, one drachm of the bromide of potassium is about equal to half a drachm of laudanum. To allay maniacal excitement, forty-five grains of the bromide and forty-five minims of the tincture cannabis are rather more than equivalent to a drachm of laudanum."

It must be remembered that the physiological action of bromide of potassium and Indian hemp are not the same; that bromide of potassium, according to Laborde, acts primarily on the spinal cord and sympathetic ganglia, and causes sleep by shutting out external impressions. Cannabis, on the other hand, acts at once upon the brain, and, being a diuretic, may help to prevent bromide of potassium accumulating in the system. Thus, when given together, these two drugs have a sedative action upon the whole nervous system. Dr Clouston found that as a rule the two drugs could be administered in the combined form for months at a time without the patients losing the appetite or falling off in weight. We have ourselves tried his prescription of one drachm of bromide of potassium and one drachm of tincture of hemp in several cases of acute and periodical mania with satisfactory results. According to Dr Clouston, it did not seem to do for melancholia—a form of mental derangement which in the acute form is sometimes relieved by chloral, and in the subacute form by opium. The question how far sedative drugs should be used in insanity is too wide a one for our present space.

We do not think it necessary to detail the manner in which Dr Clouston's experiments were made, farther than that the patients were cases in his own asylum, their diet and manner of living under his complete control; the medicines were given with regularity, and their effects noted with scientific precision. We have no objection to make to the rationale of his experiments, except that we are surprised at his assumption that beef-tea is "the most concentrated and nourishing of food." To use Dr E. Smith's remark upon the dietetic value of extract of beef, "No *combination* of nutritive elements can be offered to the body in a form more concentrated than its own flesh, and the flesh of animals is almost identical with our own." But no one affirms that hot water takes up all the nutritive material of beef as it takes up the useful principle of tea. The name beef-tea seems to mislead doctors as well as patients.

In conclusion, we have only to add that we hope Dr Clouston will not cease to prosecute his able, interesting, and useful observations.

A Batch of Pamphlets on Lunacy.

THOSE members of the profession who have devoted themselves to the study of insanity cannot be accused of wasting the opportunities which their duties have imposed upon them of communicating their opinions to the public. Being by their rules required to furnish reports of the asylums under their charge, they generally improve the occasion by ventilating the conclusions at which they have arrived in the study of those subjects, medical and otherwise, to which they have devoted special attention. Whether the law is a good one or not we do not stop to inquire; but certain it is, that there is evidence before us that many of the reports now lying on our table would never have been written at all had it not been for stern necessity.

A clergyman with whom we are acquainted, when condoled with for having to produce a couple of sermons a week, whether he had anything to say or not, confessed honestly to having once made one sermon serve three times, before the same congregation, in about the same number of months, by the simple expedient of changing the text. But in the case of the asylum physician the text must be always the same; and, accordingly, it is little wonder if, of the reports before us, amounting in number to some thirty or forty, only half-a-dozen or so are worth reading. Of the rest, suffice it to say that they are quite uninteresting. Some of them are, we are sorry to say, barely grammatical; others engage in long-winded remarks on subjects hardly worthy the attention of intelligent men; not a few—recognising the fact, we presume, that they are ostensibly addressed to the managing body of the asylum, which is not composed of medical men—indulge in popular writing, and dwell with infinite pleasure on the relation of the delusions under which a few of their patients labour. In all these there is little or no attention given to the treatment of insanity, to its pathology, its social aspects, or to anything else which can be, by any stretch of language, termed a scientific *résumé* of the subject. Of this we have a right to complain. During the last twenty years and more the nation has gone to enormous expense in providing suitable accommodation and appliances for the treatment and the proper study of the insane; but, judging by the documents before us, the results have been *nil*.

These are disagreeable and discouraging reflections. It is pleasant to turn, then, to the few notable exceptions, in which we recognise evidences of thoughtful, conscientious work, of labours for the most part of love, of zeal in the prosecution of uphill tasks, and of energy in the discussion of intricate inquiries. In the Report of the Royal Edinburgh Asylum for 1870, Dr Skae gives us, in that clear Saxon-English of which he is so perfect a master, an admirable digest of the progress of his asylum during the past year; and, if we have anything to complain of at all, it is that he seems to have studiously avoided all mention of drugs as agents in the treatment of insanity. In this indeed we can hardly blame him, as he is probably of opinion that the therapeutical treatment is at the best in an imperfect and transition state, and he may fear to give any drug the possibly undue pre-eminence which would attach to it were he to pronounce too decidedly in its favour. At the same time, a short account of his experience during the past year could not have failed to be interesting, while the record even of his failures would have added a valuable chapter to the history of the subject, and might have been the best guide to ultimate success. Taken as a whole, however, his report is a model of style, and its reticence on this and other subjects makes us only regret that its author has had no leisure during his busy, anxious life to raise a more lasting monument to himself in medical literature.

After the master comes the pupil, and in the Report of the Cumberland and Westmoreland Asylum, by Dr Clouston, we recognise much that is due to the influence of Dr Skae. On the other hand, Dr Clouston launches more boldly into the subject of the treatment, medical, moral, and legal, of insanity, and he has added a most interesting feature to his Report in the shape of a clinical history of several cases under his care during the year. This is a plan which might advantageously be adopted by others, as it is of much more practical value than any formal description of cases. The most interesting case, from a practical point of view, is one in which he procured sleep for a general paralytic by large doses of the hydrate of chloral. If this remedy is indeed one which may be given with safety in general paralysis, it will be an inestimable boon. There is no class of cases in asylum practice which are more troublesome, and which more thoroughly master the physician, than those of general paralysis with mania. Bromide of potassium is very uncertain, while opium is, in our experience, little else than a direct and speedy poison. We hope that Dr Clouston will publish some more of the results of the trial of this drug in general paralysis. Before we leave him, we must warn him against a slight tendency to slipshod writing, which may, if unchecked, become more palpable in future. The word "don't" is hardly legitimate in anything except familiar conversation.

In his Report of the Criminal Asylum at Broadmoor, Dr Orange makes some remarks on the advisableness of permitting those lunatics who have become insane during their imprisonment to be transferred to their own county asylums, where they would be within reach of their friends. This is a question which has vexed the minds of those concerned in the care of the insane, and will probably never be satisfactorily settled. Dr Orange advocates it only in the case of those who have become insane after being committed to jail for offences, and in those only after the term of sentence has expired, they being detained in Broadmoor until that time. This may be viewed in two lights. If danger to the public is all that is apprehended, two very satisfactory answers may be given: first, that all the criminal insane are not necessarily dangerous; and secondly, that in the county and district asylums there are patients quite as dangerous as any to be found in Broadmoor. But the more important question is, that it is unfair and detrimental to the present inhabitants of the public asylums that they should be forced to live in the company of criminals. It must be remembered that they are there whether they like it or not, and cannot choose their own associates. If, as appears from the context, Dr Orange's only reason for advocating the system is to relieve the crowded state of the Broadmoor Asylum, the true solution of the difficulty is to be found in building another. At the conclusion of the Report are elaborate tables of the post-mortem appearances in those who have died during the year, autopsies being held in all cases. Amid much that is interesting, there is a looseness of style in the wording of the tables which renders them in a great measure unfit for scientific reference. When adjectives such as "pale," "thick," "hard," "soft," etc., are used, the narrator ought to start with a given standard, that we may judge for ourselves of the importance of them as evidences of certain pathological conditions. For instance, in a post-mortem examination made forty-two hours after death, on the 16th July, Dr Orange talks of the cerebellum as being "too soft to be easily handled," and the "pons and medulla not so firm as usually" (*sic*). Does he mean that the want of firmness is unusual as compared with healthy viscera, or with viscera examined forty-two hours after death in the middle of July? This plan is still more perplexing when applied to measurements. When he talks of the choroid plexus (whether of one or more we know not) as being "narrow," we were somewhat surprised, as we were unaware that it was given to being anything else; but when he goes on to remark, "cornua developed," we are taken altogether aback. We did not know before that the cornua were usually undeveloped; and it appears that he has placed us, and all whom it may concern, on the horns of a dilemma. But these are faults easy of amendment, and we hope that Dr Orange will see with us that the information which he means to give is totally obscured by the way in which it is conveyed.

As we have several other pamphlets to notice, we shall say no more of the annual reports, merely pausing in conclusion to congratulate one medical superintendent on having secured an "interminible supply" of water; to condole with another on an outbreak of dissentery; to agree with a third that the "*frequency*, even of minor accidents, *tend* to augment" his "care" and anxiety; and to mention that a fourth thinks that there are "insuparable" objections to night-watching in his asylum, on account of its structural arrangements.

In a short paper, read before the Medico-Psychological Association, Dr Sibbald has given good reasons for the institution of a system of clinical instruction in insanity in the medical schools. He gives examples of the, if not ignorance, at any rate want of proper knowledge, of the subject in the medical man at the time of his setting up in practice, and advocates the establishment of wards in infirmaries, etc., for the treatment of insanity under the eye of the student. Of the first proposition—the general ignorance of medical practitioners—there is of course no doubt. We once saw a medical certificate, in which a young woman was certified to be insane solely because she was of opinion that her master's son wished to have connexion with her—a delusion which might have admitted of a little sifting. But of the expediency of devoting wards in an infirmary to the treatment of insanity, we are not so sure. Setting apart the important question whether lunatics could be suitably treated in such a place, especially with regard to exercising a proper control over their liberty, there still remains the consideration that insanity, although it may be due to the morbid condition of certain organs, like other diseases, is in one respect at least different from other diseases, namely, that in it the patient is not only as a rule convinced that he is quite well, but wishes also to impress upon the physician that he is so. It is questionable, therefore, if a true diagnosis could be arrived at in the presence of a class of students.

Dr Lockhart Robertson has again attacked the subject of the "Alleged Increase of Lunacy," in a paper which has been reprinted from the Journal of the Medico-Psychological Association. He says he still adheres to the statement which he made in a former paper on the subject, *that the alleged increase of lunacy is a popular fallacy, unsupported by recent statistics.* His paper consists so largely of quotations that it is not easy to follow the thread of his discourse; but we must say, that so far as we have been able to do so, we are not, while having no decided opinions on the subject ourselves, altogether convinced by his reasoning. The result of experience tends to the conclusion that we are not so healthy a race as we once were. Any dentist will tell you that the diseases which it is his special function to treat are largely on the increase, and there can be no question that the habits of the present day, the heavy tasks in which we engage, and the want of proper relaxation, the manner of living, the forenoon glass of sherry, or even of spirits, the afternoon tea, the late, heavy dinners, the hurried breakfasts, must promote the increase of ill health, and why not of insanity? Statistics covering a few years are of little value in these questions, for they can be made to prove anything Dr Robertson permits himself a loophole by quoting, evidently with acquiescence in his opinions, the words of a French writer—"I exclude from this hopeful view of the yearly decrease rather than increase of mental disease the insanity resulting from alcoholic abuse." If Dr Robertson means to accept this reservation—and from the way in which the passage is introduced we think ourselves justified in supposing that he does—he simply begs the whole question. If he removes one cause of insanity, why not any other, or them all? By such means he might prove that the disease had disappeared altogether.

Dr Howden, of Montrose, is so well known to the profession as the author of thoughtful papers and annual reports, that it is with special pleasure we notice anything coming from his pen. In "An Analysis of the Post-Mortem Appearances in 235 Insane Persons," he gives us some very interesting information. He makes one statement which should, we think, be carefully investigated by himself and others who attend to the pathology of the brain, that "the extent and manner in which the intellect is affected by cranial tumours depends altogether on their position. Central tumours of large size may coexist with an almost unimpaired mind; but wherever they involve or press on the convolutions, the patient presents symptoms of mental alienation." This is a most important observation, and should be inquired into.

Archives of Ophthalmology and Otology. New York: William Wood & Co. London: Trübner & Co.

We are in receipt of the first three numbers of this new periodical. It is edited by Professor Knapp of New York, and Professor Moos of Heidelberg, and is devoted to the advancement of ophthalmic and aural surgery. The plan of publication is different from that of any other journal, as it is produced simultaneously at New York and Carlsruhe in the English and German languages. The editors desire to issue the Archives in half-yearly numbers, each to contain from 250 to 300 pages, two numbers to form a volume.

Besides the able and energetic editors, we observe among the list of authors of original communications such well-known names as Liebreich and Hinton of London, Wecker of Paris, Williams of Boston, Pagenstecher of Wiesbaden, etc. etc., which serves to indicate the position the journal is intended to occupy. We owe much of our advance both in ophthalmology and otology to the scientific labours of our German confrères; and of late extensive and able investigations into these subjects have been conducted by our Transatlantic brethren. A journal, therefore, in which the writings of both are contained is well worthy of the support of all in this country interested in these branches of medicine.

A Chemical Method of Treating the Excreta of Towns. By EDWARD C. C. STANFORD, F.C.S. London: 1869. Reprinted from the "Chemical News."

The Sewage Question. By EDWARD C. C. STANFORD. 1871. Reprinted from the "Chemical News."

IN the number of Virchow's *Archiv für Pathologische Anatomie*, etc., for August last, there is an elaborate comparison of the mortality in Copenhagen before and after the introduction of a new supply of water in July 1859, carried down to 1867. In the course of this the author, Dr Hornemann, shows how greatly the mortality and general severity of typhoid fever have decreased by the introduction of water-closets and a purer supply of drinking-water; and those who are acquainted with the foul-smelling "abtritts," and nearly as foul drinking-water so often found in Continental cities, will not wonder at this. But he adds, that no one will credit a better supply of water with any improvement which may be found in the mortality of such diseases as spread by epidemic contagion, such as measles and hooping-cough, adding to these diphtheria, with this footnote, "Diese Krankheit zumal ist neu." This disease, in particular, is of recent introduction. Now, it is somewhat remarkable that this special disease, which Hornemann remarks as in a manner coming in with the water to Copenhagen, though not unknown in former ages in this country, has not decreased with our improved water-supply—that, in fact, the two best drained towns in Scotland, Edinburgh and Glasgow, have of late suffered most severely from it: in the former, it has especially prevailed in the best parts of the town, where the drainage ought to be perfect, and want of water has been comparatively unknown; while its prevalence in Glasgow clearly proves that the most abundant water-supply is impotent to prevent its outbreak or its spreading. These statements, of course, though apparently connecting diphtheria with drainage, do not, of course, prove it, but they tend to do so; and when we state that diphtheria is never conveyed by infection, though it may be inoculated—that it hangs by houses and apartments often for years, though never conveyed by fomites—that those affected by it have, in our experience, recovered so readily when removed from local influences, that we shall never again willingly treat this disease without premising this important preliminary—and, further, that in no case have the circumstances in which diphtheria has arisen been carefully investigated without disclosing the escape of sewage gases into the apartments occupied,—the conviction that there is some active relation between sewage gas and diphtheria is strongly forced upon the mind. Of course we are aware that diphtheria prevails occasionally where there are, it may be, no drains, but not, in our experience, ever where there is no sewage or no sewage gases—that is to say, where there is an entire absence of the solid or gaseous material which ought to be conveyed by drains if they were present. And when we speak of diphtheria, we take it, not by itself, but as a type of low disease produced by foul gaseous emanations, of which there are many other varieties, ranging from mere depression of the health upwards.

When a town is well drained and amply supplied with water, we might be supposed to be placed beyond this danger so far as the art of man can do; but this is a mistake. If the works have been efficiently carried out the danger may be comparatively lessened, but never entirely removed; while, if they have not been efficiently constructed at one or more points, the danger is thus increased tenfold.

If we suppose the main drains of a town to open free on the banks of a river, even then only a small amount of the sewage gases escapes by diffusion; the current of the fluid contents of the drains is downwards, but the current of their gaseous contents is upwards, where they collect with a gradually increasing pressure beneath each water-trap, escaping with force into the house at each disturbance of the trap, and even at the best rapidly saturating the few inches of water in the trap, and then flowing out as rapidly from its upper surface as if the pipe were wholly empty—an outflow which is increased by atmospheric pressure whenever the wind blows from such a quarter as to impinge upon the open mouths of the drains. Of course where the drains open into the sea, the trapping by many tons of water at one end does not increase the safety of the houses at the other, protected by only a few inches of water—the result being that, in any well-drained city, all the sewage gases of necessity escape through the houses and poison the inhabitants, unless they are otherwise and unusually protected.

But in the best-drained cities two causes are at work to increase the danger: the first is careless workmen, and the second chemical agency. Even in the best houses of the best-drained city we have no guarantee that the work of draining is effectually done—the pipes of the house may be disconnected with those of the street by many inches; the luting may be of clay instead of cement, which, of course, speedily cracks off; or bath drip-pipes may be left untrapped. And these are not supposititious instances, but actual realities, which have been found in connexion with houses on whose construction no expense was spared. Further, the sewage gases corrode the lead of the soil-pipes, and thus pour into the houses by innumerable, almost microscopic, pores; and this is a source of danger of by no means unfrequent occurrence. And besides this, with a cistern supply, we have the waste-pipe of the cistern often untrapped, and, even if trapped, still a source of danger, contaminating not only the air of the house, but even its water-supply.

To protect ourselves and our families thus from dangers which are only too real, we must have efficient control and inspection of the construction of the drains; we must have ventilation of the sewers, and a two-inch pipe below each water-trap carried to the highest chimney of each house; and we must also have a constant water-supply.

It is no doubt possible to have all these good things, provided we are willing to pay for them; the probable expense may be estimated when we mention that to provide a constant supply of water alone for Edinburgh, it was recently proposed to spend £500,000; and this sum, calculated by the promoters of the scheme, was certainly not too much, and was considered by many far too little; and yet it amounted to a first mortgage of £156 upon a house of £100 a year rental for water-supply alone, leaving all the other evils wholly untouched. If carried out, this scheme might have increased our comfort—if that consists in an abundant supply of water—but certainly would have added little if anything to our safety. We shall not attempt to estimate the amount necessary for that, but content ourselves with having shown probable reasons why water-supply should not certainly be reckoned a source of all good, and also why it is, under existing circumstances, actually a source of much evil. Especially is this the case in small towns and rural villages, the introduction into which of the present fashionable systems of water-closets, with defective water-supply, and underground and unflushed drains, is a source of unmitigated evil.

But this whole system of sewage, as at present constituted, is not only a standing menace to our lives, but even to our pockets, to an extent that is totally undreamed of, for by it we deprive our land of what its necessities require, and have to send our money to foreign parts for a substitute for that manure which we spend more money in sweeping into the sea—ofttimes, by the way, rendering our rivers nuisances instead of sources of health and pleasure, which they ought to be. The Israelites of old, when they went about their business, had each a paddle at the end of their weapon with which they covered up their *reliquiæ* and added to the fertility of the soil. Of course, to act thus in the paved streets of large cities is simply impossible; but it is matter for serious consideration if we could not in some other way restore to the soil those fertilizing ingredients which have been abstracted from it.

We in Edinburgh are familiar with one phase of this attempt, in which neighbouring proprietors, taking advantage of our exigencies and of their rights over flowing waters, have enriched themselves at our expense, without contributing anything to lighten the burdens or lessen the dangers to which we expose ourselves for their behalf. Nay, more, these proprietors not only appropriate our sewage without expense to themselves, but they even arrogate to themselves the right to prescribe the kind of sewage they shall have, and to proscribe all that shall render it unfit for their purposes; so that if each of us floods his drains with carbolic acid for our own safety, as we may think we have a right to do, the proprietors of the Roseburn and Craigentinny Meadows may interdict the procedure and compel us to run all risks rather than that they shall lose their profits. Yet the example of Edinburgh in utilizing its sewage has been held up for imitation. With great pains we have got rid of the natural swamps around us, which produced only comparatively innocuous intermittent fevers, and have replaced them by artificial stinking meadows, which in their essence are productive of diseases tenfold more fatal. Is this an example to be imitated? We cannot indeed bottle up the contents of these sewers and send them into the sea; not only would this not lessen our danger, but it would expose us to an action for damages from the proprietors of these meadows; but we may do better—we may let the water flow, but, taking from it its fertilizing ingredients, sell them to all who may require them. The time is fast coming when this sewage question must be forced upon our attention—indeed the time has come when every thinking man ought, in the interests of humanity, to give his best thoughts to this question; and as a small but valuable contribution to the solution of the difficulty, we beg to refer to the pamphlets named at the head of this article, and also to an abstract paper on the same subject by the same author, read before the mechanical section of the British Association this autumn.

The system recommended by him is a modification of the earth-closet system, in which some form of carbon is substituted for earth. The main objections of the earth-closet to large towns are—the large amount of earth required, and the difficulty in obtaining the necessary supply.

"By the use of charcoal the amount of deodorizer required is reduced to less than a fourth as compared with earth, and by carbonizing the manure removed, a constant supply is secured.

"It is urged that the sewage difficulty may be enormously lessened, if not completely done away with, by treating the excreta of towns as we treat the ashes, removing each separately, and keeping all out of the public sewers. The quantity per head to be removed per annum may be fairly estimated at eight cwts., of which about seven cwts. represent urine alone. The amount of carbon required to perfectly absorb the whole of this quantity is less than eight cwts., so that in an ordinary household of ten persons, the total annual quantity required cannot exceed four tons, and the whole removal will probably, owing to the drying action of the charcoal, be about five to six tons.

"The same household would use about twenty tons of coals, and probably send away four tons of ashes; much of this coal would have to be carried into the bedrooms. The charcoal method is so perfectly inoffensive that commodes may be placed, if desired, in every bedroom, without the least fear of odour or of danger to health. In this respect no water-closet can compete with it. The carbon-closets are also arranged to be quite automatic, and require no attendance from within. The charcoal is introduced through an aperture in the roof into a reservoir at the top of the house; a closet on each floor draws on this source of supply, and the whole of the product is discharged in a dry deodorized state into a cemented vault in the basement story of the house.

"The chamber urine is emptied into a small earthenware urinal on each floor, and from this a lead pipe conducts it direct to the vault, where it is absorbed by the charcoal from the closets.

"The reservoir need only be replenished, and the vault emptied, once a year. The manure removed can scarcely be distinguished from cinders by an ordinary observer, and it is equally inoffensive.

"The value of the material removed is about 1s. per cwt., or 8s. per head per annum. The household has the charcoal and the material removed without cost. The manure is removed and carbonized in revolving retorts driven by a steam-engine; the whole of the material is then converted into charcoal; and gas liquor, tar, and gas are distilled off and collected in suitable condensers. The charcoal increases at each reburning by the amount yielded by the excreta itself, a portion is returned to go on charging the closets, and the balance is available as manure. The charcoal produced is an animal charcoal, resembling that made from bones, and contains all the phosphate and potash and soda salts of the excreta. The gas liquor furnishes ammonia derived from the animal portion of the food, and acetic acid derived from the vegetable portion. The tar and gas are used for heating purposes at the works. A new closet has been specially patented for the use of charcoal, by Messrs Pollock & Pollock, of Leeds, and may be obtained of the Carbon-Closet Co., 46 Haymount Street, Leeds. This closet, which is figured in 'The Engineer' of 5th August 1871, and which may be seen at 154 West Regent Street, Glasgow, is expressly constructed for the use of powdered charcoal; it delivers a minimum but accurately measured quantity, and places it exactly where it is required. When these come more into use the amount of charcoal will be much less than that alluded to in this notice; the quantity will, it is expected, be nearly one half the amount stated.

"For large public works the carbon-closet is invaluable; it is the only method of removal which the clumsiest of workmen cannot make offensive. The straw and waste with which the pipes of all workmen's water-closets are so constantly stopped do no harm here, and are all converted into charcoal on reburning. The principal shipbuilders on the Clyde are so impressed with these advantages, that they are pulling down large and extensive erections for water-closets to substitute carbon-closets. Urinals on this system are constructed simply of vertical slabs, six feet high and two feet wide, set in the form of a W, on a large stone flag, over a tank of charcoal; an occasional wash with a mop dipped in dilute hydrochloric acid will make the slabs instantly and perfectly clean. The acid is cheap, and it cannot injure either the urinal or the charcoal."

It is significant of the importance of this system that in Glasgow, the town best supplied with water in the whole world, a company has been formed for the purpose of carrying it out. We wish it good speed, and with all our heart we desire that Edinburgh too could be induced to give it a trial. Is it too much to hope that the Infirmary Managers will give this system due consideration? dare we hope that the new Infirmary shall set us a bright example in this as well as in other sanitary matters? We do hope, for we well know their anxious desire to do their best for their fellow-men; and any system which can not only provide for the proper co-relation between food and the manure necessary for the production of food, but also convert a curse into a blessing, and a continual source of expenditure into a source of profit from every point of view, cannot but have strong claims on the attention of all who desire to benefit mankind. Besides this, our civic rulers, who seem to have chiefly an eye to the main chance, ought to reflect that 8s. a head per annum on our present population of 250,000 amounts to £100,000 a year, which would yield the handsome interest of 10 per cent., even though the important sanitary arrangements necessary were to cost the double of what was to be expended in poisoning our houses and sweeping all this profit into the sea. And this, mark you, is not to be wrung from unwilling tax-payers, but gained in course of trade, and employed in relieving the city burdens—doing away with taxation. Surely a system which promises so fairly in every respect is worth a trial.

Pulmonary Consumption: its Nature, Varieties, and Treatment, with an Analysis of One Thousand Cases to exemplify its Duration. By C. J. B. WILLIAMS, M.D., F.R.S., etc.; and CHARLES THEODORE WILLIAMS, M.A., M.D. Oxon. London: Longmans, Green, and Co.: 1871. Pp. 402.

On Phthisis and the supposed Influence of Climate, etc. By WILLIAM THOMSON, L.R.C.S. Ed. Melbourne: Stillwell and Knight: 1870. Pp. 160.

Phthisis—Deaths from. Return ordered by the Legislative Council of Victoria, Nov. 1870.

Digest of the Return of all the Deaths from Phthisis ordered by the Legislative Council. By WILLIAM THOMSON, L.R.C.S. Ed. Melbourne: Stillwell and Knight: 1871.

DR WILLIAMS, Sen., is a man who for forty years has probably seen more of phthisis than any other man in Britain; for more than fifty years he has been in the profession, for the practice of which he was prepared by the teaching of such masters as Alison, Laennec, Andral, and Chomel, and now he has given us the most valuable gift he could bestow, the record of his lifelong experience. We thank him most gratefully for the gift, as a further proof of his love to mankind, in whose service his life has been spent. It is, however, hardly a book to be criticised, at least within so short a space as could be assigned to it here; it is a work to be studied, and we can assure our readers that it will well repay a careful and studious perusal. It is a positive pleasure to read the introductory chapters, and mark the clear way in which he traces the pathology of tubercle from Laennec downwards, and points out that British views as to this pathology have not been so wanting in correctness as some have supposed; and, in particular, the interesting way in which he brings out, by direct quotation, that more than forty years ago (1824) Dr Abercrombie suggested and gave strong reasons for believing in the adenoid basis of tubercle—a theory which the researches of Wilson Fox and Burdon Sanderson have recently contributed greatly to revive and to place upon a surer basis. It is not want of individual ability that we in Britain have to complain of, it is the absence of the opportunities of practically inculcating the views thought out by noble minds. What a grand school might have been founded by the indefatigable Abercrombie, had he been placed at the head of a pathological institute like that of Berlin or Vienna!

In regard to the family predisposition and transmission of phthisis, the chapter on which has been written by Dr Theodore Williams, we find no reference to the very singular fact, that the tubercular as well as other diatheses may be transmitted from the male to the female—not simply by cohabitation, for this belongs to the same doubtful category as transmission by contagion—but through the medium of a fœtus; so that not only a mother may become thus tubercular, but even in such a way that children begotten by a healthy father out of an apparently healthy mother may inherit a diathesis thus acquired from a previous tubercular husband. This depends upon a peculiar but well-known law, by which the maternal organism becomes inoculated by the peculiarities of the paternal organism, through the influence of the fœtus in utero —a law which has been ably illustrated in a series of papers by Dr Alexander Harvey, of Aberdeen, in this Journal, during 1849–50 and in 1854, and which has been also practically illustrated in relation to this very disease by Dr Perroud, in his work "De la Tuberculose." Both Harvey and Perroud relate several such cases, and we should like to have heard Dr Williams's experience in this matter, as also in relation to the influence of a wet-nurse in modifying the constitution of a child in relation to tuberculosis.

The chapter on the Duration of Phthisis is deserving of a more careful analysis than we can find space for. Not only has an improved system of treatment contributed materially to prolong the lives of phthisical patients, but the improvements in the art of diagnosis have been such that many are now recognised as phthisical, whose cases would formerly either have altogether eluded observation, or would only have been recognised as phthisis at a more advanced stage of the disease; so that, apart from any curative agency, strictly so called, there are abundant reasons why phthisical patients should appear to live longer nowadays than they used to do. Of the 1000 patients whose cases are narrated, 198 are ascertained to have died, the average duration of the disease having been seven years and 8·72 months; while of the 802 patients who were alive when last heard of, the average duration of life has been eight years and 2·19 months—a somewhat higher duration than among the deaths, which were probably the worst cases, and one which Dr Williams considers likely to increase still further. As these cases were all amongst the better classes, the high average duration of life in these may be accepted as a further proof of the good to be obtained by a tonic—or what has been perhaps more correctly termed an analeptic—treatment. But there can be no doubt but that a strong infusion of ordinary hospital patients would rapidly reduce the average to something greatly nearer Laennec's mean of two years; while Portal's statement, that phthisical patients may live from ten days to forty years, is as true, but as indefinite as ever.

The chapters on Treatment are particularly instructive, Dr Williams entering into all the minutiæ of diet, climate, and habitation, as well as the more strictly medicinal modes of treatment, which he divides into antiphthisical and palliative; the great object of the former being to sustain the vitality of the bioplasm, and prevent its degeneration into phthinoplasm, which he regards as the essence of tubercle; and he makes the strong statement that cod-liver oil "has done more for the consumptive than all other means put together," while he regards its usefulness as still increasing. Dr Williams states, that in cases of peculiar weakness of stomach, with tendency to vomit, he has found the $\frac{1}{32}$ or $\frac{1}{24}$ of a grain of strychnia so efficacious in preventing this, when given along with the oil, that he has been led to regard strychnia as a specific against the retching of phthisis. He also speaks highly of the tonic powers of arsenic, especially in relation to nutrition and respiration, and states that he has found it most useful in chronic cases complicated with asthma, eczema, or psoriasis. In regard to hæmoptysis, Dr Williams says that his experience of ergot of rye has been most satisfactory; he has often tried it where other styptics had utterly failed, and with prompt and decided effects; the dose, he adds, should be not less than one drachm of the fluid extract, repeated for a few times. Might we suggest to him a trial of the subcutaneous injection of ergotine, as more rapid and energetic in its action, and in every way more applicable and useful in suitable cases? while in other cases more rare, where the blood oozes from the degenerated mucous membrane of the bronchi, the perchloride of iron, in the form of spray, seems often to be markedly efficacious. The chapters on Treatment we cordially recommend, and the whole work is altogether one of the most instructive we have ever had occasion to peruse, as it could hardly fail to be, when it contains the essence of the lifelong experience of such a man as Dr C. J. B. Williams.

Dr Thomson's work deals with phthisis from a specific point of view; we in Britain have been too much in the habit of almost regarding climate as a specific, or, at all events, as a special element in the cure of consumption, and of recommending the climate of Australia as one of those best adapted for this end, that it is very startling to be told, as we are at the very commencement of this work, that nearly 1 in 3 of the adult population of Melbourne, between the ages of 20 and 45, and above 1 in 4 at the same ages in the whole colony of Victoria, die of phthisis. This startling announcement was, by a unanimous vote of the Medical Society of Victoria, declared to be untrue; but the subject was very properly regarded of such importance that a parliamentary inquiry into the matter was ordered, and this was found fully to bear out Dr Thomson's statistics; 2143 persons having been found to have died from phthisis, in Melbourne and its suburbs, during a period of five and a half years, and out of a population of 170,000. 1 in 8 is the proportion of deaths from phthisis to that from all causes in England and Wales, 1 in 10 the similar ratio for Melbourne; but Dr Thomson shows that in the colony the deaths from phthisis are increasing with the population, till the ratio now equals and even probably exceeds that of the mother country. The author compares the statistics of death from phthisis throughout the general population in Victoria, America, Tasmania, Scotland, England, and the continent of Europe. He also considers the same topic in relation to various callings, such as the clerical, domestic servants, soldiers, factory girls, etc., making in each case authenticated statistics the basis of his reasonings, which inexorably lead to the conclusion that the Australian climate, in spite of its mild winter, sunny days, and balmy nights, has no "specific influence in preventing and controlling the development of pulmonary consumption;" and further, that statistics do not prove that the Australian climate is in any respect capable of preventing the development of that disease, or even of averting its progress. It is the old story over again. "I have seen," says Professor Casper, "the gravestones of Germans, English, French, and Russians in Rome and Naples, in the beautiful grave-yards of Marseilles, Pisa, Nice, and Malta, and bitter thoughts have crossed my mind as to the sad state of medical science, and the blasted hopes of hundreds of families." No doubt, however, in certain cases, change of climate is beneficial, warding off catarrhal complications and improving the general health; but, as a rule, it is not and cannot be of so much advantage as is often in ignorance ascribed to it. Galen sent his phthisical patients to sail up the Nile—"non propter se, sed propter longinquitatem navigandi." And too often it seems as if, even yet, the selection of a health resort were made for the same reason which that wily old physician knew so well to put correctly. In our advice to patients in regard to this matter, we must always take into consideration the state and stage of the disease, the temperament of the patient, and the probable deprivation of home comforts, any or all of which may operate so injuriously as to do away with any good results from mere change of climate. Amongst those elements to be duly considered, house comfort is no small item; and we who possess large airy rooms, and well-built, warm stone houses, ought to think twice before we remove our patients to the thin-walled, coldly-furnished, and less easily heated houses of more southern climates, the misery of which is poorly compensated for by a warm midday sun. In regard to these matters, Dr Williams's work also contains some very suitable advice.

Digitalis; its Mode of Action, and its Use. By J. MILNER FOTHERGILL, M.D. London: H. K. Lewis: 1871.

THIS essay, which obtained the Hastings Prize of the British Medical Association for 1870, has been already so fully noticed in our pages (*vide* our September number, p. 278), that we have only now to congratulate the author on its reappearance in this improved shape, and to express our hope that it will prove useful in directing greater attention to the therapeutic virtues of this valuable drug. This essay is one which should be in the library of every practitioner.

The Medical Practitioner's Legal Guide. By HUGH WEIGHTMAN, Esq., M.A. Cantab. London: H. Renshaw: 1870. Pp. 416.

A Manual of the Laws affecting Medical Men. By ROBERT GEORGE GLENN, LL.B. London: J. and A. Churchill: 1871. Pp. 460.

BOTH of these works contain a variety of interesting information in regard to the laws affecting medical men. The possession of neither, nor, for the matter of that, of both of them, will preclude the necessity for occasionally consulting a lawyer. In two cases we have consulted them, and found them both alike wanting. A man died of cancer of the bladder, after an illness of three years' duration, dying ultimately from uræmia, after being only a day or two confined to bed. After death he was adjudged a bankrupt. A claim for deathbed attendance is under these circumstances a preferable claim, and to be paid in full. Query, how much of that attendance is preferable? Neither Weightman nor Glenn give the slightest hint; yet this is a very important matter, and might involve a large sum.

Again, quite recently, a coroner ordered two medical men to make an examination of the person of a female suspected of having given birth to a child. The result was the suicide of the female. Query, how far is a coroner or procurator-fiscal justified in making such an order? Again these works give no reply.

Part Third.

PERISCOPE.

REPORT ON OPHTHALMOLOGY.

BY DR ARGYLL ROBERTSON.

PROFESSOR DONDERS ON THE SUPPORT OF THE EYES DURING EXPIRATORY BLOOD PRESSURE.

On the occasion of a recent visit to this country, Professor Donders had his attention directed by Darwin to a theory propounded by Sir Charles Bell in the second part of his paper of the Nerves of the Orbit, to the effect that the closure of the lids, which occurs during sneezing and coughing, is a provision to compress and support the vascular system of the eye, and to guard it against the violent rush of blood which attends these expiratory acts. Sir Charles Bell attributed the appearance of flashes of light before the eyes during the act of violent coughing or sneezing, not to the impulse of blood forced into the eye, but to the contraction of the eyelids to counteract the force of this impulse, and to guard the delicate texture of the eye. As proof of this, he stated that if the eyelids be held open during the act of sneezing, no sensation of light will be experienced. If, again, the eyelids of a child crying and struggling with passion be held open, the conjunctiva becomes suddenly injected, the support of the lids having been withdrawn.

As a result of investigations, Professor Donders was convinced that strong expiration induced a considerable increase in the pressure of blood in the *arteries*, but that this rapidly passed off. Experiments further showed that during expiration the jugular vein became distended with blood, and emptied during inspiration, and that this distention was not due to a regurgitation of blood from the thorax. Donders, therefore, concluded that the increased blood-pressure in the smaller vessels and capillaries during forced expiration was occasioned, *1st*, by an increased flow towards these vessels; and, *2d*, by a retarded circulation from them. Of these, the latter acts more slowly, and perhaps less strongly, but for a longer period than the former. The one acts by accelerating, the other by retarding, the current of the circulation. On examining how far these circumstances act on the circulation of the eye, Donders found by examining the living human eye with the microscope, that during expiration the superficial veins become increased in calibre, but that the superficial arteries undergo little change. Slight extravasations of blood into the conjunctiva from blows, sneezing, coughing, etc., are of common occurrence, and unattended with serious results, therefore the support of the eyelids does not appear to be of much importance to these vessels except as a means of checking the increase of extravasation. The deep vessels of the eye find support in the distented condition of the eyeball and the elasticity of its coats. In their case increased blood pressure does not threaten danger except by inducing excessive tension. The vessels can only be distended so far as increased space in the interior of the eye can be obtained. Dr Adamük's experiments have demonstrated that increased blood pressure is regularly followed by increased tension of the fluids of the eye, depending upon serous exudation, which is thus a new protection to the vessels of the eye. Donders found, from ophthalmoscopic examination of the human eye, that voluntary expiratory effort after deep inspiration induced a distention of the retinal veins. Pressure with the finger on the eye causes diminution in the calibre of the retinal veins, and Donders has convinced himself that the pressure of the lids can effect the same change. The lids, therefore, can and do support the intraocular bloodvessels during violent expiratory efforts.

That the orbital veins are distended during forcible expiration, Professor Donders considers probable from anatomical considerations, the flow of blood from the ophthalmic veins into the cavernous sinus being hindered by increased intracranial blood pressure. Careful measurements with the ophthalmometer also demonstrated a readily-recognisable protrusion of the eye forwards during continued and forcible expiration, which protrusion could only be accounted for by dilatation of the orbital veins. This dilatation Professor Donders believes may be checked by the pressure exerted by the closed lids. Another physiological circumstance originally observed by Müller was confirmed by these experiments, namely, that, in ordinary circumstances, the degree of protrusion of the eye varies according to the extent to which the eyelids are opened, and that during each act of winking the eyeball is pushed back into the socket by the pressure of the lids. The movement of the eye forwards when the eyelid is raised, is partly to be accounted for by the contraction of the levator muscle pushing the eye forwards. The eye was also found to be slightly projected from the orbit during the act of accommodation for a near object.

In conclusion, Professor Donders considers it still doubtful whether the closure of the lids during forced expiration is to be regarded as a protective act to support the circulation of the eye, or is to be viewed simply as one of many associated movements.—*Archiv für Ophth.*, band xvii. abth. i. p. 80.

ON THE LIMIT OF SENSIBILITY OF THE EYE FOR THE COLOURS OF THE SPECTRUM. BY S. LAMANSKY, HEIDELBERG.

By the advice of Professor Helmholtz, Mr Lamansky made his observations upon polarized light transmitted through the ordinary spectroscope. The resulting spectrum was viewed through calcspar, when the two images thus obtained varied in brightness according to the angle at which the light struck the polarizing glass-plates. Taking one of the colours of the spectrum for observation, he then diminished the angle at which the light struck the glass-plates (by turning the plates round) until the two images appeared to the eye to be of the same brightness. The angle at which the glass-plates then stand, may be viewed as indicating the limit of sensibility of the eye for that colour. Each of the coloured rays was taken in succession, and accurate measurements of the angle made. The result of his observations was, that the eye was sensitive to the colours of the spectrum in the following order:—Green and yellow equal; blue, violet, orange, red; and that the sensitiveness of the eye for green and yellow is greater, and for violet, orange, and red less than for white light.—*Archiv für Ophth.*, band xvii. abth. i. p. 123.

DR EMIL EMMERT, BERN, ON BASEDOW'S DISEASE (EXOPHTHALMIC GOITRE).

Referring to the difference of opinion that still exists regarding the discoverer of this disease, the Germans claiming the credit for Basedow, the English for Graves, Dr Emmert points out that Basedow has the priority of publication, but that Graves independently arrived at similar conclusions, and published his observations three years later. Dr Emmert's attention was, however, directed by Mr Bader of Guy's Hospital, to a book entitled "Collections from the Unpublished Medical Writings of the late Caleb Hillier Parry, 1825," which contained a chapter on "Enlargement of the Thyroid Gland in connexion with Enlargement or Palpitation of the Heart."

Mr Parry narrates eight cases of the affection, and adds other five under the head of "Bronchocele, with Affections of the Head." The chief symptoms in the first eight cases were palpitation, strong pulsations in the carotid with weak radial pulsations, enlargement of the thyroid gland, a very quick, often intermittent pulse, and in one case exophthalmos. In the other five cases, besides the symptoms mentioned, epilepsy, deafness, headache, giddiness, and other nervous symptoms were present. Dr Emmert, with the view of directing attention to Mr Parry's observations, has reproduced these thirteen cases in his paper. We fail, however, to find any allusion to exophthalmos as a symptom in any of the cases.

Some of the thirteen related cases, says Dr Emmert, must, without doubt, be ranked as cases of Basedow's disease, and it only remains to determine whether we can classify them all as such, and whether Parry, whose first described case, and the one presenting most distinctly the symptoms of Basedow's disease, dates from the year 1786, had by the classification of these cases recognised a disease corresponding to that of Basedow.

Dr Emmert is of opinion that if this be decided in the affirmative, the affection should for the future be termed not Basedow's or Graves's, but Parry's disease.

During a seven months' residence in London, Dr Emmert had the opportunity of examining about twenty cases of this disease. 90 per cent. of the patients were women, chiefly from seventeen to thirty-five years of age. Palpitation was present in all the cases, as also strong pulsation in the carotids, with relatively weak radial pulsation; the pulse from 90 to 100 in the minute. The majority of the patients were pale and anæmic. Enlargement of the thyroid, though not a constant symptom, was present in most cases. In some it varied periodically in degree. In all there was exophthalmos. The author refers to one case in which there was exophthalmos of one eye only. In all the cases he found the movements of the eye somewhat restricted in all directions, and a diminished sensibility of the cornea and conjunctiva. In about six he noticed a peculiar form of defective speech. When patients so affected are about to speak, they open their mouths pretty wide, and the jaw moves in a spasmodic manner; and only after several attempts do they obtain command of speech. They then speak rapidly, and often somewhat indistinctly.—*Archiv für Ophth.*, band xvii. abth. i. p. 203.

REPORT ON THIRTY-EIGHT CASES OF PARALYSIS OF THE ACCOMMODATION. BY DR SCHEBY-BUCH, WURZBURG.

Of the thirty-eight cases, twenty-four were due to diphtheria (in twenty following diphtheria of the throat, in three diphtheria affecting wounds, in one diphtheria of vagina and skin), five were referable to sausage-poisoning, and the remainder were of more or less obscure causation (typhus, scrofula, alcohol, etc.).

In only one of the diphtheritic cases was there observed dilatation and sluggish action of the pupil, while this symptom was present in five out of thirteen of the other cases (in the fourteenth the state of the pupil was not noticed). As in only one of his diphtheritic cases the circular fibres of the iris (which are supplied by the same nerve as the ciliary muscle) were paralyzed, and as in that case, and also in similar cases related by others, the two paralytic affections did not run a parallel course, Dr Scheby-Buch thinks the paralytic affection cannot be referred to any disorder of the nerve-centres; and as the action of the Calabar bean on the accommodation and size of the pupil is not interfered with in these cases, the affection cannot be referred to the muscles themselves; hence the peripheral extremities of the nerves must be the seat of the disease.

In all the cases, a diminution in the refraction of the eye was observed, and in seven a decrease in the acuity of vision, which existed only during the occurrence of the paralysis.

In almost every case, the Calabar bean was employed along with tonics, and this treatment was attended with unequivocal good results.

The absence of the forward movement of the iris, when a near object is looked at, is referred to as a useful diagnostic symptom.—*Archiv für Ophth.*, band xvii. abth. i. p. 265.

ON THE USE OF THE CALABAR BEAN IN DIPHTHERITIC PARALYSIS OF THE ACCOMMODATION. BY PROF. MANZ, FREIBURG.

Prof. Manz noticed that the pupil was generally little affected in these cases. He found the employment of oft-repeated weak applications of the Calabar bean to effect more permanent benefit than stronger ones. The preparation he employed was Calabar bean paper. In two of the cases, the application of the Calabar bean to the one eye produced secondary contraction of the pupil of the other eye. [Might this result not be accounted for by the patient rubbing his eyes during the application of the paper, and conveying the tears containing the active principle of the Calabar bean to the other eye?—D. A. R.] Although the paralysis is one which naturally tends to recovery, the healing process is at any rate very much quickened by the use of the Calabar bean.—*Zehender's Monatsblätt. für Augenheilk.*, Sept. 1870.

CASE OF NEUROSIS OF THE OPTIC NERVE AND RETINA.

Dr Herman Pagenstecher, Wiesbaden, narrates the case of a girl, twelve years of age, who was brought to him for advice on account of rapid diminution of vision of four weeks' standing. For a year previously she had suffered from nervous symptoms—attacks of lameness, first of one leg, then the other, headaches, vomiting, etc., which always yielded to strychnia. On examination, vision was found very defective in both eyes: they were sensitive to bright light, and moderate darkening of the room improved the vision slightly; but the application of either a red or blue glass at once brought the vision almost to a normal standard. There was hyperæsthesia of the whole of the left side of the body, and pinching or striking any part of the left side induced reflex movements and appearance of bright spectra before the left eye. Blue-coloured glasses were ordered. Three days later the acuity of vision was found to be normal with blue glasses. The hyperæsthesia existed as before. The coloured spectra that appeared before the eye on pinching the left side of the head, were described by the patient as consisting of concentric rings—the outermost red, the innermost yellow, the intermediate black. Pressure over the back of the head and first three cervical vertebræ induced severe pain, and produced the brightest-coloured spectra. Pressure below the ninth dorsal vertebra on the left side produced merely the appearance of a red disc before the eye. During the next ten days the hyperæsthesia gradually diminished in degree, but was still markedly present at the end of that time. Dr W. Müller saw the case, and applied the constant galvanic current, with the following effect: On applying the copper pole to the back of the head and the spinous processes of the upper cervical vertebræ, while the zinc pole was held in her hand, the weakest current produced the coloured rings above described during the whole period of the passage of the current. Applied below the seventh cervical vertebra, only the red colour was produced; below the third dorsal vertebra, no spectrum was produced. On direct stimulation of the right optic nerve, by applying either the copper or zinc pole to the immediate neighbourhood of the eye, a yellow glimmer appeared on opening and closing the current, which however, was persistent when the current was applied to the left optic nerve; the same occurred on passing the current through the head. Irritation of the sympathetic, by applying one pole to the angle of the jaw, the other over the first cervical vertebra, induced a yellow colour. After stimulating the medulla for half a minute, all appearance of coloured spectra vanished, and they could not be reproduced by passing the current in any direction. During the course of the examination, the patient stated that the colours became less and less distinct, till yellow took the place of the other colours, and eventually it disappeared. The following day, pressure over the back of the head reproduced the colours as before. The constant stream, with the application of the copper pole over the medulla, was daily employed, and in the course of a few days the affection entirely disappeared.—*Zehender's Monatsblätt. für Augenheilk.*, Jan. 1871.

ON LEAD-POISONING AS A CAUSE OF OPTIC NEURITIS.

Mr Jonathan Hutchinson narrates five cases of defective vision occurring in patients affected with lead-poisoning, in all of whom the presence or previous existence of inflammation of the optic nerve was revealed on ophthalmoscopic examination. Numerous cases of this kind have been recorded in the German medical journals, but this form of amaurosis has attracted little attention in this country.—*Royal London Ophthalmic Hosp. Reports*, vol. vii. part i. p. 6.

FAILURE OF SIGHT DURING LACTATION.

Mr Hutchinson draws attention to the fact that dimness of vision during suckling may be merely an indication of the existence of hypermetropia, and not necessarily indicate retinal disease. Until weakened by lactation, many hypermetropic women experience no inconvenience, being able to bear the accommodative strain necessary to overcome the error of refraction; but during lactation they find it difficult to keep the ciliary muscle up to its unusual exertion. The use of tonics is indicated at the time, and it is well to examine as to whether spectacles are not requisite.—*Roy. Lond. Ophth. Hosp. Reports*, vol. vii. part i. p. 38.

THE EFFECTS OF THE APPLICATION OF A LEECH TO THE EYE.

BY DR LEBRUN, BRUSSELS.

The patient, a man-servant, thirty-nine years of age, presented himself for advice on account of an eye affected with severe inflammation, intense photophobia, and excessive circumorbital pains. At the lower and outer border of the cornea a wound with three radiating arms was observed—in fact, a typical leech-bite—the pupil was displaced as after an iridesis, and there was a considerable collection of pus at the foot of the anterior chamber.

The patient stated that for some time the eye had suffered from lachrymation, sensitiveness to light, and slight pains, which symptoms had rather been aggravated than relieved by the collyria that had been ordered by his medical attendant. He had then himself conceived the idea of checking the inflammation by the abstraction of blood, and he had therefore applied a leech *loco dolenti*. The leech-bite penetrated the coats of the eye, allowing the aqueous humour to escape, and causing the displacement of the pupil. The iris and deeper textures of the eye had become intensely inflamed, but the lens retained its transparency. In spite of appropriate treatment, the deep inflammation persisted, the pupil became occluded, and the eye was becoming atrophied, when the patient left the institution, where he had been under observation. He was directed to return if the sight of the other eye became affected. Two months later he again presented himself with irritability and symptoms of the commencement of sympathetic ophthalmia of the other eye. The leeched eye was consequently removed without delay, and the irritable condition of the other eye rapidly subsided; but the patient declared that the sight was not so clear as it had originally been.—*Annales d'Oculistique*, tome lxiv. p. 136.

CASE OF ANOPHTHALMOS. BY DR PIETRO GRADENIGO, VENICE.

The subject of this malformation was a little girl, born of healthy parents, in whom the most careful examination failed to detect, beyond the complete absence of eyeballs, anything that indicated defective or arrested development. The eyelids were normal, fringed with eyelashes growing regularly, the puncta were permeable. In consequence of the absence of the globes, the lids were drawn into the socket, and their external surface concave and their edges directed inwards, while the palpebral fissures were a little shorter than usual. The eyelids were incapable of any movement, doubtless from the absence of the levator muscle, and the want of support. When the infant cried, some superficial wrinkling of the skin, due to the action of the orbicular muscle, may with difficulty be observed. There is little or no lachrymal secretion. On opening the lids a cavity was displayed of an ovoid or irregular pyramidal form, capable of holding a large cherry, and covered with a smooth rose-coloured membrane. No rudiments of eyeballs could be detected, nor anything to lead to the conclusion that the recti or oblique muscles or the levator palpebræ were present. Among the small number of cases of anophthalmos on record, one scarcely finds any that were not associated with other malformations.

The child came under observation in 1865, and died in 1868 of apoplexy. On post-mortem examination, the contents of the orbits between the mucous membrane and the periosteum were found to consist of fat and cellular tissue, in which well-developed muscles and nerves were found. The four recti, two centimètres in length, were inserted in a fibrous capsule, which seemed to represent the sclerotic. The levator palpebræ was divided into two portions, the one uniting with the superior rectus, the other portion on the one side separating the two parts of the lachrymal gland, on the other terminating in the trochlea of the superior oblique. The superior oblique was well developed, and normal in origin and course, except that its tendon was inserted in the belly of the rectus superior. The inferior oblique passed first to the fibrous capsule representing the eye, but then changing its direction it proceeded to the apex of the orbit, and its tendon was inserted at the edge of the optic foramen. The lachrymal apparatus was well developed, and there was no anomaly of the circulation, except that the long and short ciliary branches of the ophthalmic artery were absent. The optic nerves did not exist; the central portion and chiasma were also absent; the corpora quadrigemina were only rudimentary, and it was with difficulty that the corpora geniculata could be recognised. The ophthalmic ganglion did not exist, nor the nervous filaments which united in it. In other respects the nervous supply was regular. —*Annales d'Oculistique*, tome lxiv. pp. 174 and 263.

ON THE EFFECT OF CALABAR BEAN AND ATROPINE ON THE HUMAN EYE AFTER DEATH.

Borelli found that, if applied to the eye within six hours after death, these substances acted on the pupil as during life. In exceptional cases, effects followed their application so long as twenty-four hours after death. He found the result of their application less marked in cases where death had ensued from old age or marasmus. The length of time that had elapsed after death also influenced the result. A reflection of the myotic action of the Calabar bean from the one eye to the other was also noticed, which never was seen in the case of the mydriatic action of atropine. This difference Borelli attributes to the fact that the brain, which is the organ of reflex action for the circular fibres of the iris, preserves its vitality longer after death than the great sympathetic which innervates the radiating fibres.—*Annales d'Oculistique*, tome lxiv. p. 250 (extracted from *Giornale d'Oftalmologia Italiano*).

OBSERVATIONS ON THE CURE OF CATARACT BY PHOSPHURETTED OIL.

Prof. Gioppi of Padua reports six cases of cataract in which he had used phosphuretted oil. Four were cases of soft, the other two of ordinary senile cataract. The oil was applied for two weeks, in the form of drops to the eye, four to six times a day, as an inunction to the circumorbital region, and internally in the form of pills containing one milligramme, of which from two to four were taken daily. He did not observe any result local or general from this treatment, and no change in the lens.—*Annales d'Oculistique*, tome lxiv. p. 251 (extracted from *Giornale d'Oftalmologia Italiano*).

ON THE USE OF STRYCHNINE IN AMAUROSIS. BY PROF. NAGEL OF TUBINGEN.

For some years the author has been convinced that strychnine is a remedy of great importance, and incapable of being replaced in the treatment of amaurosis. Subcutaneous injection of small doses of the nitrate of strychnine was the method of administration employed. In cases of slight amblyopia, presenting the characters of paralysis of the retina, he often found not merely central but excentric vision improved. Commencing, or even tolerably advanced, atrophic degeneration of the optic disc is also ameliorated by the action of strychnine. Even in desperate cases, the progress of the disease is arrested, and one may even obtain improvement. In one amaurotic individual, the rapid progress of the disease was arrested, so that five days after the use of the strychnine he was able to decipher letters, notwithstanding the glossy whiteness of the optic disc. In other cases the disc regains in part its red colour. The amblyopia caused by the want of use of an eye sometimes improves rapidly. Thus, an eye that could only count fingers at a few feet distance, after fourteen days' treatment could read small print (Jaeger, No. 3). Remarkable success several times followed in cases of amaurosis of traumatic origin, and also in cases of toxic amaurosis. Cases of cerebral and spinal amaurosis are least benefited by its use. Intraocular optic neuritis and its consequences are not modified by the employment of this remedy. Cerebral irritation and tabes (dorsalis) contraindicate its administration. The hydrate of chloral may be employed at the same time to allay the sleeplessness of amaurotics, or the secondary effects of strychnine, without interfering with its action on the eye.—*Annales d'Oculistique*, tome lxv. p. 76.

TWO CASES OF EXTRACTION OF A FOREIGN BODY FROM THE CORPUS VITREUM. BY DR R. BERLIN, STUTTGART.

The first case was that of a young woman serving in a shooting-gallery for air-guns, who was struck on her right eyebrow with the barrel of a charged gun, which at the same moment went off. Vomiting, diarrhœa, and short attacks of fainting and giddiness followed. She was seen twelve hours after the accident. There was no fever, and no retardation of pulse. The eyelids were extremely swollen. There was great chemosis of the conjunctiva. The cornea was gray and opaque, and lacerated by a wound branching in four directions. The eyeball was collapsed and soft, and all perception of light lost. In order to judge whether the air-gun had power to drive the ball into the brain, the gun was obtained and a shot fired against a deal door at a distance of four paces. The ball was thrown back by the soft wood, a superficial mark being alone left. The result of this experiment led Dr Berlin to conclude that the ball had not force enough to pass twice through the membranes of the eye, and also to penetrate the contents of the orbit and its walls. As all chance of restoring sight was lost, the interior of the eye was examined with a probe, and a hard smooth object was felt at the bottom of the eyeball, which, on being removed with forceps, proved to be the bullet. The inflammation gradually subsided, and the patient was dismissed in eighteen days with a shrunken eyeball.

The second case was that of a smith, who, while chiselling cast steel, received a blow on his right eye, which was followed by rapid obscuration of sight. When seen, four hours later, the conjunctiva was moderately inflamed; there was a perpendicular wound of the cornea, three lines in length, reaching to the sclerotic; the iris and lens were cut in the same direction as the cornea, and the lens was already opaque. On examining the visual power of the eye, it was found that the light of a candle was recognised at the distance of about six paces, but it was found that the upper half of the visual field was entirely wanting, indicating either that the inferior part of the retina did not perceive light, or that the rays of light were prevented reaching that part of the retina by some material obstacles. From a series of anatomical investigations on eyeballs extirpated soon after injuries, Dr Berlin concluded that the limitation of the field of vision depended on an extensive hæmorrhage into the vitreous humour. He is of opinion that limitation or absence of the upper part of the field of vision is an important diagnostic symptom of the presence of a foreign body in the eye; as when such a body is propelled through the coats of the eye it naturally sinks to the lower part of the vitreous humour, and any blood that may be effused occupies a similar position. The patient was received into hospital the following day. As the symptoms had increased in severity to such a degree as to indicate the commencement of a purulent inflammation of the inner coats of the eye, there was no hope of recovery of sight; but it was necessary, with the view of checking the inflammation and avoiding the chance of sympathetic ophthalmia of the other eye, either to extract the foreign body or enucleate the eye. The patient preferred the former operation, which was performed by making a linear incision at the lower part of the cornea, removing a portion of iris and the lens, probing for the foreign body in the vitreous chamber till it was felt, and then removing it with forceps. A piece of iron, 3½ lines long by 2 lines broad, was thus removed, accompanied by a little blood and pus. The eye gradually shrank without the annoyance of suppuration of the vitreous.—*Archives of Ophthalmology and Otology*, vol. i. p. 30.

DISLOCATION OF THE LENS INTO THE CORPUS VITREUM, AND AFTERWARDS INTO THE ANTERIOR CHAMBER. BY DR HENRY D. NOYES, NEW YORK.

A man in a drunken brawl received a blow with the fist on his left eye. When examined, three weeks later, by Dr Watts, the lens was found displaced directly downward in a vertical plane, its upper border projecting above the rim of the enlarged pupil, atropine having been previously applied to the eye. About a week after he said his sight had greatly improved, so that he was now able to read. The lens was found to have come forward into the anterior chamber. This change of position had been brought about by a vigorous fit of sneezing. On the evening of the last day when he visited the Infirmary, and when atropine had been put into the eye, he took a pinch of "catarrh-snuff," and sneezed seven or eight times. He immediately afterwards found his sight improved. From the altered position of the lens (which retained its transparency) Dr Noyes expected to find the eye astigmatic, and, if formerly of normal refraction, myopic. On examination, the uninjured eye was found to be hypermetropic ($\frac{1}{18}$), while the other was myopic ($\frac{1}{9}$), astigmatic ($\frac{1}{24}$). The injured eye at that time was free from irritation, so no operative interference was adopted, but the patient warned to return at once should irritation ensue. This advice was disregarded, for when the patient returned after a month's absence the eye was found in a state of complete glaucoma, and the patient had suffered severely for a considerable time, but been dissuaded by his friends from returning sooner to the Infirmary. All perception of light had been lost; the lens was opaque; the eyeball hard and painful on pressure. To allay the irritation extraction of the lens was undertaken. The operation was followed by the desired result.—*Archives of Ophthalmology and Otology*, vol. i. p. 37.

PHYSIOLOGICAL NOTES.

M. BERT has been instituting a series of experiments in illustration of "The Phenomena and Causes of the Death of Fresh-water Animals when plunged into Sea-water."

1. *The duration of survival* varies in different species. The fol-

lowing are the mean results:—Bleak, 18 minutes; roach and minnows, 25 m.; *chevaines*, 30 m.; tench and gudgeon, 35 m.; loach and carp, 50 m.; gold fishes, 1 h.; perch, 1 h. 15 m.; grayling, 2 h. to 3 h.; a salmon a year old, about 6 h.; sticklebacks *(G. leiurus)*, from 2 h. to a month or longer; eels (4 to 6 inches long), from a day to a week or more.

Frogs, 1 h.; tadpoles, 45 m.

Daphnias (water-fleas), 10 m.; cyclopes, 20 m.; larvæ of *Chieronanus*, 1 h.; those of *Ephemera*, 2 h., and those of *Corethra plumicornis*, 5 h. or 6 h.; crayfish, 30 h.

These observations were made at a mean temperature of 15° or 16° C. The colder the water is, so much the longer does the animal survive. Thus, at 9° a minnow dies in 30 m.; at 12°, in 25 m.; at 22°, in 14 m.; and at 28°, in 9 m.

2. *The phenomena that precede and accompany death* were examined in a carp and in a frog.

A carp plunged in sea-water is violently agitated for some (5 to 10) minutes, and then remains motionless, rising to the surface in consequence of its less specific weight. The respiration is at first accelerated and then becomes slow; the branchiæ at first assume a deep red-brick tint, which soon changes into a blackish hue; the anterior layer of the crystalline lens becomes opaque; the body becomes covered with a thick mucus; sensibility disappears, and all movement ceases. If now plunged into fresh water it exhibits no signs of life, and yet the muscular contractility is intact, and, on the application of an irritant to the spinal cord, the muscles contract and the heart continues to beat.

On examining the highly-congested branchiæ, and washing them with a fluid that does not affect the blood-corpuscles, the latter are seen to be dentated and broken, and heaped up in entangled masses.

A frog, when immersed in sea-water, is much agitated, and exhibits signs of pain, unless he can keep his muzzle above the surface. When all signs of sensibility have disappeared the nerves and muscles are still found to be excitable, and the heart, filled with dark blood, is still seen to beat spontaneously. The blood-globules, even in the superficial veins, are unaffected, but the lens and sometimes the cornea of each eye become opaque. The animal is found to have lost from one-fifth to one-third of its weight, the loss being chiefly borne by the muscles, which present a continuous or durable contraction like a kind of cramp.

This loss of weight is very much greater than the loss experienced by fishes, which, when small, lose about 1-15th, and, when they are larger, present a very insignificant loss.

This physiologist further ascertained by experiments, in which artificial salt water was used, that a given quantity of sodium or magnesium is far more pernicious in the state of chloride than in that of sulphate.

M. Bert proposes to lay a second communication before the Academy, in which he will consider the reason why these chlorides are specially fatal.

Closely analogous to the investigations of M. Bert are those of M. Felix Plateau, the Belgian physicist. His original article appears in the last volume of the "Mémoires Couronnés," published by the Royal Academy of Belgium, and is thus analyzed by Professor Schwann. In his "Physico-Chemical Researches on the Aquatic Articulata," M. Plateau goes far in advance of all observers of the allied subject, "Why fresh-water fishes cannot live in salt water and *vice versa*." As might be expected, he finds that of the fresh-water articulata which he plunged in sea-water, those which had an aerial respiration could bear the change, while those in which the respiration was branchial and cutaneous died with a rapidity that seemed proportional to the activity of their respiratory action. That the difference of the densities of fresh and sea water were not the cause of their death is obvious, because if the fresh water be treated with sugar till it attains the density of salt water most of the animals are scarcely affected. Hence the saline matters, or some of them, must be the poisonous agents. To find out what was the noxious ingredient, he made solutions of the chief salts found in sea-water—of the chlorides of sodium, potassium, and magnesium, and the sulphates of magnesia and lime. Each solution contained only one or two of these substances, which were added so as to equal the residue left by a corresponding volume of sea-water. The result of the experiments showed that the solution of the chlorides of sodium and magnesium were as poisonous as sea-water; while those of the sulphates had little effect.

M. Plateau shows that these fresh-water animals when living in sea-water, or in the solutions of the chlorides, absorb the last-named salts into their bodies, and restore them if placed in a little distilled water, all having been carefully washed, while the sulphates are scarcely at all absorbed.

In another set of experiments he plunged marine articulata in fresh water. They all died in little more than nine hours; and analysis showed that they gave off the chloride of sodium of their bodies to the surrounding fresh water. In this case the different density of the medium was not the cause of death, since they did not live much longer in water sugared up to the density of sea-water than in ordinary fresh water. The presence of the chlorides is consequently the condition that is indispensable for their existence.

Finally, he shows that all these facts are capable of being explained by the laws of endosmosis, diffusion, and dialysis; and that it is in consequence of the slight diffusibility of the sulphates that they are harmless as compared with the chlorides.

Part Fourth.

MEDICAL NEWS.

OBITUARY.—On the 24th September, SAMUEL SOLLY, F.R.S., died somewhat suddenly, though not altogether unexpectedly, as for a year past he had been laid aside by illness from professional duties. Mr Solly for many years taught surgery and clinical surgery, and his teaching has been embodied in his work entitled "Surgical Experiences." But his name is perhaps better known in connexion with his researches on the structure of the brain, which gained him his Fellowship of the Royal Society. *Tempora mutantur*, and Solly on the brain is not so well known as it once was; but the author did good service in his day and generation, and his name is one certain of a niche in any medical Walhalla—*Eheu! fugaces, fugaces, labantur anni.*

FRASER THOMSON, M.D., L.R.C.S.E., F.R.S.E., for many years enjoyed the leading practice in Perth, his native city. His father was a clergyman of note, and a brother of the well-known Rev. Dr Andrew Thomson, of Edinburgh. Dr Fraser Thomson was an able microscopist, and especially fond of zoological studies, and in our own pages he has recorded some of his more interesting medical cases. He died very suddenly, in crossing the Perth station, immediately on his arrival by train from Edinburgh.

ANNIVERSARY OF VON GRAEFE'S BURIAL.—On Sunday, the 23d July, the Berlin Medical Society celebrated the anniversary (of Von Graefe's burial) by placing on his grave a laurel wreath. Von Graefe was President of the Society from its foundation till his death. A very large number of medical men attended and witnessed the ceremony. Professor Langenbeck, his successor as President of the Society, delivered an address on the occasion, of which the following was the conclusion:—"The crown of laurel which we to-day in affectionate remembrance lay upon his grave will, like ourselves, fade; but the imperishable laurel which science has wreathed for him will flourish and bear new fruit so long as science endures."

ON A MEANS OF AVERTING THE SPREAD OF SMALLPOX.—Dr John Day of Geelong, in a paper read before the Medical Society of Victoria, has suggested the employment of the peroxide of hydrogen as a means of averting the spread of smallpox. He believes that the virus is always associated with pus-cells, and that the only way it can be destroyed is by oxidation. He has found that pus-cells possess, in a very high degree, the power of transforming antozone into ozone—the oxygen of combination. Peroxide of hydrogen, according to Schönbein, consists of antozone and water. In effecting this transformation, the pus-cells do not themselves undergo any very rapid oxidation; a large proportion of the ozone is thus generated in a free state, ready to combine with any oxidizable substance near. Thus he believes that if peroxide of hydrogen was brought into contact with pus-cells containing smallpox virus, ozone would be generated and the virus destroyed. The form of peroxide of hydrogen he recommends is Robbin's ozonic ether, which is a compound of peroxide of hydrogen with absolute ether. It may be readily diffused, even through the wards of an hospital, by a spray apparatus, and is very persistent and powerful in its action, at once destroying sulphuretted hydrogen and other noxious gases. Letters written from smallpox houses have before now been the means of conveying the infection of the disease, but Dr Day shows that they may readily be disinfected, without injury to the writing, by spraying them lightly with ozonic ether. Dr Day suggests that the bodies of smallpox patients should be sponged once or twice a day with a mixture of ozonic ether and tepid water, which would certainly remove the nauseous odour which always accompanies the suppurative stage, and also, he hopes, destroy the active virus by which smallpox is propagated. The ozonic ether might also be mixed with the collodion, cold cream, or lard so often used in the topical medication of smallpox. The high price of ozonic ether might be lessened by employing, instead of pure ether, methylated ether, which is very cheap, and would answer quite as well for disinfecting purposes. Further, oil of turpentine, when exposed to light and air, rapidly absorbs antozone, and might then be usefully employed, either alone or in solution in methylated spirit, which dissolves it in all proportions, in disinfecting the flooring, skirting, and other woodwork in places in which smallpox has appeared.—*Pamphlet forwarded by author.*

A NEW SHEETING FOR SPLINTS has been patented by Mr Cocking of Penzance, which softens readily by heat and rapidly hardens again on cooling, so that it can be readily and easily moulded to a limb. It seems to be a combination of shoddy with the gums used to stiffen the framework of hats; and those of our country brethren who may happen to have employed old hats in the making of extempore splints, will appreciate a material which is softer, firmer, and quite as easily manipulated.

The London agent for THE NEW YORK LIFE INSURANCE COMPANY requests us to state that this company—although not coming under the requirements of the "Life Assurance Act of August 9, 1870," which requires all foreign life companies commencing business here *after* the passage of the Act, to deposit £20,000 with the Accountant-General in Chancery before commencing business here—has decided to make a deposit of funds in London for the security of policyholders of Great Britain and Ireland, and has commenced by depositing this day 100,000 dols. in United States bonds, worth to-day over £21,000, in the hands of the following trustees:—Sir Frederick Arrow, Knight, Deputy Master, Trinity House; Frederick Francis, Esq., Director, London and County Bank; A. H. Phillpotts, Esq., Director, Bank of British North America. The company has agreed, in the deed of trust to the trustees, that in the event of a claim upon any policy being disputed, they will submit the same to the decision of the British courts.

RECENT RESEARCHES ON FLIGHT.—Of late the perplexing problem of flight has received a greater amount of attention from physiologists and savants than has been bestowed upon it for years, and the result of their researches and experiences is in a fair way of becoming remarkable for its fruit-bearing character. Whilst abroad such men as Borelli, Straus-Durckheim, Chabrier, Girard, and Marey, have severally given to the world the gist of their labours in this branch of science, at home His Grace the Duke of Argyll and Dr J. Bell Pettigrew have awakened our deep interest by their views on natural and artificial flight. To the latter is due the honour of giving birth to the celebrated "figure-of-8 wave theory," that is now attracting so much notice in our aeronautical schools.

As early as 1867, Dr Pettigrew delivered, before the Royal Institution of Great Britain, a lecture in which he propounded that novel theory, and in 1868 he published, in the "Transactions" of the Linnean Society, an elaborate memoir on "The Mechanical Appliances by which Flight is attained in the Animal Kingdom." The year after, Professor J. E. Marey, in the "Revue des Cours Scientifiques," bore out Dr Pettigrew's ideas by the detail of his experiments with the sphygmograph, with which he succeeded in causing the wings of insects and birds to register their own movements. He says—"But if the frequency of the movements of the wing vary, the *form* does not vary. It is invariably the same; it is always *a double loop*, *a figure of* 8. Whether this figure be more or less apparent, whether its branches be more or less equal, matters little; it exists, and an attentive examination will not fail to reveal it." An indefatigable worker, Dr Pettigrew continued without pausing the task to which he had set himself—and that to him is indeed a labour of love; and in this year's "Transactions" of the Royal Society of Edinburgh we have from his pen a complete monograph on "The Physiology of Wings," in which he treats with equal felicity of both natural and artificial flight. The mass of interesting fact brought to light by the author is too copious to allow of lengthened dissertation, but from it we abstract the following items:—

The wing is generally triangular in form. It is finely graduated, and tapers from the root towards the tip. It is likewise slightly twisted upon itself, and this remark holds true also of the primary or rowing feathers of the wing of the bird. The wing is convex above and concave below; this shape, and the fact that in flight the wing is carried obliquely forward like a kite, enabling it to penetrate the air with its dorsal surface during the up stroke, and to seize it with its ventral one alike during the down and up strokes. The wing is movable in all its parts; it is also elastic. Its power of changing forms enables it to be wielded intelligently, even to its extremity; its elasticity prevents shock, and contributes to its continued play. The wing of the insect is usually in one piece; that of the bat and bird always in several. The curtain of the wing is continuous in the bat, because of a delicate elastic membrane which extends between the fingers of the hand and along the arm; that of the bird is non-continuous, owing to the presence of feathers, which open and close like so many valves during the up and down strokes.

The posterior margin of the wing of the insect, bat, and bird, is rotated *downwards and forwards* during extension, and *upwards and backwards* during flexion. The wing during its vibration descends further below the body than it rises above it. This is necessary for elevating purposes. The distal portion of the wing is twisted in a downward *and forward direction* at the end of the down stroke, whereas at the end of the up stroke it is twisted *downwards* and backwards. The wing during its vibrations *twists* and *untwists*, so that it acts as a reversing reciprocating screw. The wing is consequently a screw, *structurally* and *functionally*. The blur or impression produced on the eye by the rapidly-oscillating wing is *twisted upon itself*, and resembles the blade of an ordinary screw-propeller. The twisted configuration of the wing and its screwing action are due to the presence of figure-of-8 looped curves on its anterior and posterior margins; these curves, when the wing is vibrating, reversing, and reciprocating in such a manner as to make the wing change form in all its parts.

We may further point out that Dr Pettigrew has not based his ideas on the structure of wings on mere theoretical considerations. Besides elaborate anatomical examination, he has entered with a true experimental spirit into a close study of the visible movements of most of the winged tribe. The very excellent diagramatic views with which his paper is elaborately illustrated convey at a glance much that it is difficult to express in words. In proof of this the reader need but compare those figures bearing on the wing movements of the butterfly, the dragon-fly, and the bird.—*Land and Water.*

PHTHISIS AND DEATHS IN THE MELBOURNE HOSPITAL.—During the eight weeks ending on the 16th June, 71 persons—exclusive of natives of the colony—died in the Melbourne Hospital. 17, or 24 per cent., of the deaths were occasioned by consumption. The persons who died of phthisis had resided 21, 1, 10, 18, 3, 17, 8, 16, 17, 15, 3, 7, 13, 3, 6, and 8 years respectively in Victoria, or an average of nearly 10½ years each. The length of residence in the colony of one person was not known.—*Australian Medical Gazette.*

ROYAL COLLEGE OF SURGEONS, EDINBURGH.—At the annual meeting of the Royal College of Surgeons, Edinburgh, held on 18th instant, the following office-bearers were elected for the ensuing year:—*President*, William Walker. *Secretary*, James Simson, M.D. *Treasurer*, John Gairdner, M.D. *Librarian*, Archibald Inglis, M.D. *President's Council*, Andrew Wood, M.D.; Robert Omond, M.D.; James Dunsmure, M.D.; James D. Gillespie, M.D.; James Spence; Henry D. Littlejohn, M.D.; *Ex officio*, John Gairdner, M.D. *Examiners*, Archibald Inglis, M.D.; Robert Omond, M.D.; James Dunsmure, M.D; Peter David Handyside, M.D.; James D. Gillespie, M.D.; Henry D. Littlejohn, M.D.; Patrick H. Watson, M.D.; David Wilson, M.D.; John Smith, M.D.; Argyll Robertson, M.D.; Joseph Bell, M.D.; Thomas Annandale. *Assessors to Examiners*, James S. Combe, M.D.; William Brown; James Spence; James Simson. *Conservator of Museum*, James B. Pettigrew, M.D. *Assistant to Conservator*, James Grandison. *Officer*, John Dickie.

ROYAL INFIRMARY.—Dr JOHN CHIENE, F.R.C.S.E., formerly Demonstrator of Anatomy in the University of Edinburgh, has been appointed Assistant Surgeon to fill the vacancy caused by the retirement of Dr Gillespie.

DR JOHN WILLIAM OGLE has been appointed Inspector of Anatomy in England and Wales in place of the late Dr Cursham.

PERIODICALS RECEIVED.

American Journal of Obstetrics,—August.
American Journal of Syphilography and Dermatology,—October.
American Practitioner,—Sept., Oct.
Annales d'Oculistique,—July, August.
Archives of Ophthalmology and Otology,—Vol. i. Nos. 1, 2; Vol. ii. No. 1.
Australian Medical Gazette,—June.
Berliner Klin. Wochenschrift,—August 28 to October 23.
Births, Deaths, and Marriages, Monthly Return, of,—August, September.
Boston Medical and Surgical Journal, Oct. 5.
British and Foreign Medico-Chirurgical Review,—October.
British Medical Journal,—Aug. 26 to Oct 21.
Bulletin Général de Thérapeutique,—Aug. 30 to Oct. 15.
Dublin Quarterly Journal of Medical Science,—August.
Food Journal,—Aug., Sept., Oct.
Gazette des Hôpitaux,—June 15 to Oct. 19.
Gazette Hebomadaire de Médecine, etc.,—Aug. 25 to Oct. 20.
Glasgow Medical Journal,—August.
Journal of Mental Science,—October.
Journal of the Gynæcological Society of Boston,—September, October.
Journal of the Royal Agricultural Society of England,—No. 14.
Journal of the Scottish Meteorological Society,—July.
Madras Monthly Journal of Medical Science,—August, September.
Medical Press,—July 5 to October 25.
Medical Times and Gazette,—August 26 to October 21.
Medical World,—September, October.
Medizinische Jahrbücher,—Jahrgang 1871, Heft 3.
New Remedies,—July.
New York Med. Journal,—July, Aug., Sept.
Philadelphia Medical and Surgical Reporter,—August 5 to September 23.
Philadelphia Medical Times,—Aug. 15 to October 2.
Practitioner,—September, October.
Revue de Thérapeutique Medico-Chirurgicale,—September 1 to October 15.
Virchow's Archiv,—August 15.

Part First.

ORIGINAL COMMUNICATIONS.

ARTICLE I.—*Sympathetic Insanity illustrated—The Influence of the Body on the Mind, and the Mind on the Body.* By ARTHUR MITCHELL, M.A., M.D., F.R.S.E., etc., Commissioner in Lunacy for Scotland.

(*Continued from page* 304.)

MOREL says that the brain is always the seat of the insanity, though it is not always the seat of the cause. By this he meant, that insanity may be determined by a sympathy of the brain with morbid action in some *remote* part of the body. That this often happens we have already shown, but Dr Maudsley points out that the centre of morbid irritation, which gives rise to secondary disorder by reflex or sympathetic action, need not of necessity be in a distant organ—it may be in the brain itself. Thus, he says:—"A tumour, abscess, or local softening in the brain may nowise interfere with the mental operations at one time, while at another it produces the gravest disorder of them; and it is not uncommon in abscess of the brain for the symptoms of mental derangement, when there are any, to disappear entirely for a time, and then to return suddenly in all their gravity"—that is, there may be a secondary and sudden derangement or abolition of function by sympathetic or reflex action. "Instances now and then occur," the same able writer points out, "in which a sudden loss of consciousness, or a sudden incoherence, or sudden mania, or even sudden death, takes place, where no premonitory symptoms have indicated grave local disease of the brain," though grave disease existed there.

I direct attention to this form of reflex insanity, because I think it probable that cases will occur to many of my readers, which cannot be satisfactorily explained except on some such theory as that ingeniously advanced by Dr Maudsley.

It is necessary for this view to look on the tumour or abscess as external to the brain though within the skull. In epilepsy caused by tumours or osseous deposits within the skull, the fits are probably often determined in this way. It may be difficult to explain why, in such circumstances, fits suddenly occur, and why all is right in the intervals—why, on the contrary, there are not continuous convulsions, the tumour or spiculum of bone being always there. We know, however, that there are unceasing changes in the circulation of the blood in the brain as regards quantity, quality, and distribution; in other words, the conditions are liable to important variations, and perhaps this may be sufficient in some way to account for the sudden fits of sympathetic disturbance to which allusion has been made. Whatever be their explanation, however, the phenomena are not more remarkable than that an unextracted bullet should at times cause great and at times no suffering.

One lesson we learn from these excessive derangements of the mind, which come suddenly and pass away quickly and completely, namely, that great functional disorders of the brain are possible without structural changes in it, for it is impossible that these last —the structural changes—could come and go with the appearance and disappearance of the abnormal mental phenomena.

So much for this form of sympathetic insanity.

In many of the morbid conditions we have been discussing, it was seen that particular trains of mental symptoms resulted from particular bodily states. In insanity which springs from irritation in remote organs, the delusions have sometimes a close relation to the functions of those organs—the sexual hallucinations which often present themselves when the irritation lies in the ovaries, are an illustration of this. But such relations of mental to bodily states of disease are equally interesting when they are not associated with the functions of the organs in which the eccentric irritations exist. They are scarcely less so when it is doubtful whether they are properly due to eccentric irritation, and do not rather originate in primary disorder of the brain, the definite signs of bodily disease being perhaps a sequence.

In that morbid state, for instance, which is commonly known as the general paralysis of the insane, the corporeal and the mental lesions are equally profound and equally distinctive. I shall endeavour briefly to describe them both; but it must be understood that my description applies to typical cases, and that in this, as in all other diseases, the signs are sometimes more and sometimes less marked.

First, as regards the bodily disorder,—the progressive paralysis is usually first detected in the tongue, the articulation being difficult. It is then seen in the gait of the patient. He walks stiffly, and easily stumbles if the floor be uneven. Then the arms are similarly affected. As this goes on, the pronunciation of words becomes more difficult and indistinct, and the gait more unsteady, like that of a drunken man. A further progress, and the patient can no longer maintain himself erect, and language is impossible. During the course of his illness he has sudden attacks of loss of consciousness, often attended by convulsions.

Here, then, we have a train of physical symptoms, which are characteristic as well as grave. But the mental symptoms are neither less characteristic nor less grave. This form of progressive paralysis of the body is accompanied by a profound and remarkable insanity. The precursory mental phenomena may vary considerably, but, in the majority of patients, there soon come phenomena which have a broad, clear, and steady character—" grandiose and extravagant delusions which have no relation to the former *ego*, and include the most opposite and logically incompatible ideas as facts." Terrible as their condition may appear, even to an ordinary onlooker, they themselves serenely " extol their own feeling of wellbeing." They have millions of billions of money, thousands of castles, and fleets of ships; they build bridges to the sun, walk thousands of miles per day, wear cloth of gold, have countless wives and rivers of wine; nothing ails them. They tell you that they speak fluently, though they can scarcely speak at all when they tell you so. They say that they can walk and ride, though they can scarcely stand when they say it. These phenomena are from time to time interrupted by other states, but they may be fairly spoken of as characteristic and pervading. Sometimes, of course, they are more obscure than I have described them, but they have always more or less of the same character. Throughout the whole, there is a weakness of the intellect and will, and this weakness goes on to more decided dementia in the later stages of the malady.

It will be understood that I am not writing an account of general paralysis here. I am merely saying that about it which will show that it exhibits a steady and remarkable state of bodily disorder, with a like steady and remarkable state of mental disorder.

What has been said of this and of other states of insanity suggests the remark that there are physical as well as psychical signs of mental disease. Every one probably knows this, but few bear it sufficiently in mind. Are not the progressive paralysis, the congestive attacks, and the grandiose delusions, all signs of the form of mental disease called general paralysis of the insane? Are not dilatation, contraction, and inequality of the pupils, physical signs of insanity, aiding us both in determining its existence and its origin? It is true, of course, that these things may occur without mental derangement; but so may quick and laboured breathing without pneumonia, or a quick pulse and hot skin without the eruption of scarlatina. Yet the quick breathing, quick pulse, and hot skin are among the signs of these diseases; and so, among the signs of insanity there occur many of a physical nature, which are of great importance in shaping the prognosis and in guiding treatment.

In the general paralytic, of whom we have been speaking, there is a complete destruction of the comparing faculty, an alienation of the personality, a mental disorder of the deepest and gravest kind; but we find another class of cases—and a large one—in which a definite bodily state, or bodily disease, gives little more than a colour and a tone to mental action. This may be so slightly pronounced that we never think of calling it insanity, though in reality it differs from it only in degree. "Nature draws less-marked boundaries than science" would like to do, or than society for its convenience actually does, between sanity and insanity.

Who, for instance, is not familiar with a characteristic of the mental state of consumptives? I refer to their inability to realize their fate. What they have seen in others, and what they see in themselves, should certainly reveal it. They may know well that they are labouring under a disease "wherein 'tis as dangerous to be sentenced by a physician as by a judge," but in this matter they cannot use the comparing faculty in a healthy manner. And so they go on forming projects to be carried out when they recover, dreaming of happiness in the future, when all hope of it is already gone, and clinging to a delusion as to the state of their health, as Georget says, till death with a soft stroke breaks it. This is nothing but a low form of that mental state which is seen so strongly in the general paralytic. Whether the consumptive's state of mind arises from the fact, as Sir Thomas Browne says, that they feel not themselves dying, and therefore hope still to live, or whether it is a mere phase of the heightened mental activity which is believed to belong to scrofulosis, I cannot tell; but the last is the more probable explanation.

This activity of the cerebral centre, due to scrofulosis, is seen in the liveliness and precocity of scrofulous children; and many observers think that it takes special and æsthetic directions in the adult. Thus Dr Macartney says:—"There is a mental character belonging to the scrofulous habit, which more strikingly indicates the peculiar state of the constitution than all other signs. Scrofulous persons in general exhibit little mental energy, but a gentleness and amiability of disposition, a refinement and judgment in matters of taste, and a purity of moral feeling, which is sometimes so remarkable as to place them in these points beyond the scale, and even beyond the conception, of the mass of mankind."

On all hands, indeed, we meet with these minor displays of a steady alteration in mental action, as the result of particular bodily states. The psychical longings of pregnant women, for instance, furnish another good illustration.

Casper, who generally has hard views about the insane, admits and says of these phenomena that they "belong to the category of fixed ideas," and that, "in their inner nature, they are nothing else than fixed delusions."

We are scarcely accustomed to think of them in this light, but, nevertheless, it is scientifically correct. What else are they but abnormal or unhealthy mental states, which something in that peculiar condition of the body begets? It must be evident to every one that it would be a very grievous thing indeed if they were to continue through life; and it is only their transitoriness and their harmlessness which lead us to overlook their true significance. We call them whims and caprices, but we have only to intensify them a little and to prolong them, to make us feel that we might easily be forced to call them by another name. In the cases detailed by Shenck, for instance, these longings actually assumed such proportions and force as to constitute not only insanity, but a dangerous insanity.

Who, again, does not recognise phenomena of an exactly comparable character in the shyness, the evasive and cast-down look, the dull irresolute character, the conceited self-consciousness of the masturbator; in the religious colour which irritation in the sexual organs gives to melancholia; in the peevish, egotistic, uncertain, and depressed state of mind which attends indigestion; in the hypochondriac's selfish regard to his own health, his dwelling on trifles, his wavering emotions and resolutions, his timorousness and strange fancies? Are we not all aware of the great change of character which follows the physical changes constituting puberty? From the intellectual indolence of a young girl do we not infer that sexual development is being retarded, and from expressions of fantastic sentimentality that it is commencing?[1]

What passes in the economy to explain all these connexions and interminglings of body and mind, I cannot tell. The psycho-physical union, as Feuchtersleben has well said, is undefined as well as delicate. "The greatest disorganizations of the ganglionic system," he points out, "have frequently no influence on the state of the mind, while the smallest disturbances of that system are often sufficient most deeply to disorder it." We may have an ovarian tumour of enormous size with no apparent influence on mental action, while a trifling irritation in the ovary may send the patient to an asylum,—just as a man may have his hand shattered in the most formidable manner without having tetanus as a consequence, though a trifling cut on his finger may induce that disease. It is of importance to keep this in mind, so that we may avoid the error of dismissing the consideration of any alleged cause on the ground of its seeming insufficiency.

There must be *a something*, however, about the nature of these trifling eccentric irritations which makes them at times act so powerfully on the brain. At least this is probable; but what that something is, I cannot tell Perhaps it may be useful, however, to bear in mind that it is the *gentle* rubbing of the sole of the foot which causes laughter. A blow or a blister on it would have no such effect. It is the *tickling* of the fauces *with a feather* which produces vomiting.

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[1] Feuchtersleben, 193.

We can pass a ball probang or the tube of a stomach-pump, with little fear of causing the patient to vomit. What is it that happens to the peripheral nerves of the stomach to originate in the mind what we call hunger? When we remove hunger by filling the stomach, it looks as if we had rather increased than diminished the irritation of these nerves. It would seem, in short, that those eccentric irritations, which have so great an influence on the brain, have some special character, and are probably confined to the very peripheries of the nerves. Many writers acknowledge this; but they never get beyond the indication of an opinion that it must be something analogous to tickling. Thus Georget writes:—"The first dentition is often accompanied by cerebral injuries, which we can only attribute to the continual sensation of tickling, itching, or pain, which lasts for months and days without interruption, or is renewed from time to time, with shorter or longer intervals." We make little progress scientifically perhaps by this view of the matter; yet it has its use in forcing us to realize, when dealing with insanity, that the seeming insufficiency of such a cause may not be a real insufficiency, and that we may have a sympathetic or reflex disorder of the mind of the gravest possible character, from what looks a very trifling irritation in a remote part of the body—just as we may have convulsions from teething, or tetanus from a scratch on the finger.

There are other states still which illustrate the intermingling and interdependence of body and mind, to which allusion should be made. Most of what has been said in this and in the preceding paper, about the relations of mind and body, was so arranged as to explain what is meant by sympathetic or reflex insanity. But these relations are deep and wide. We find them everywhere, and it may be useful to refer to them, as they exist in such a state as that of dizziness.

We are all familiar with what is called dizziness; but some may not have thought much of the mental phenomena which it presents. That it is accompanied by "a state of mental confusion" all will allow. Let us look for a moment at the nature of this confusion, as it occurs in a simple and familiar case, which I take from Mason Good:—"In looking through a window, the objects that pass before us in regular order pass singly and without confusion; but if this order be interrupted by movements we are not accustomed to, they make us dizzy with their motion, and we see them confusedly and in delusive numbers." "The objects, or their representations, presented to the perception, appear sometimes to circumvolve horizontally from right to left, or perpendicularly from above downwards or from below upwards, or to be very whimsically changed in their form." And not unfrequently we ourselves may seem "to be moving as well, and commonly in a contrary direction to the apparent motion of the objects." These are just hallucinations of sight; and they are often accompanied by "illusory sounds, as of whispering or murmuring or beating of drums." The objects we see acquire motions they have not, and are magnified and distorted, and so also the gentlest and lightest tones—"the whisperings of a mere current of air in a room"—may seem to be the rushing of a cataract.

The sensation "of a buoyant undulation or swimming" is soon passed in persons whose nervous constitution is weak and mobile; and there comes then a state of mental confusion, with delusions of sight and hearing, which may possibly end in syncope and loss of consciousness.

Now, what does all this mean? The dizzy patient sees the room turning round, and hears the bells ringing; but he is under a mistake—the room never moves, and no bells ring. If the dizzy state, however, kept just at that point, what would happen? He would continue to see the circumvolving of the room, and to hear the ringing of the bells; and might, by-and-by, be unable to believe his friends when they assured him that no bells were ringing, and that the room was standing still. In short, he might lose his comparing faculty, and so become a lunatic.

No reference has yet been made to the manner in which the mind is influenced through the senses. Here body and mind may be regarded rather as melting into each other than as standing apart but related. Seeing involves a mental operation which has been excited by a peculiar irritation resulting from the action of light on the peripheral expansion of a portion of the brain, prolonged to the outside of the skull and arranged in a special manner in the eyeball. When thus put, it looks as if it were the very brain itself that saw; this, however, is not more true than that it is the very brain itself that feels, and hears, and tastes, and smells. In a certain sense, we may leave the brain intact and yet lose these senses. We may lose them, for instance, by simply destroying the peripheral arrangements of certain nerves which proceed from it. Descriptive anatomy confines the brain to the skull, but the nerves which leave the brain may be considered as still a part of it to their very end; and it is on the very end that light, sound, and odours act, and give rise to seeing, hearing, and smelling, which are really cerebral, and not ocular, aural, or nasal phenomena. So that here again we have definite mental results from irritations, produced by such soft and subtle agencies as waves of light, or waves of sound, or impalpable odours, on the peripheral expansions of nerves.

I can do nothing more than touch this subject, but I cannot leave it without giving an illustration of the way in which a disordered sense may lead to delusional insanity.

The eye, for example, is subject to diseases which may cause us to see objects double or quadruple; and, where the predisposing causes of mental disorder are sufficient, there may grow out of this error of sight an insane delusion. Though persons thus affected are usually not deceived, and know very well that there is only one object where there appear to be two, Hoffbauer says that, if they are disposed to mental disease, a state of delusional insanity may thus easily originate in them; and his commentator, Chambeyron, narrates a case very much to the point:—

"Towards the end of the year 1825, Madame N., a washerwoman, in consequence of violent rheumatic pains, gave up her occupation, and took to needlework. Being little accustomed to this new kind of work, she had to sit far into the night in order to gain enough to support her; notwithstanding this, she fell into want, and was attacked by a very acute ophthalmia, which after a time became chronic. But now, when she sewed, as she continued to do, she saw four hands, four needles, and four seams. Madame N. at first took a correct view of, and rightly understood this phenomenon, or at least referred it to its true cause; but after a short time, her poverty having increased and produced a strong impression on her mind, she became convinced that she was really sewing four seams at once, and that God, touched by her great misfortunes, had wrought a miracle in her favour."

We have here, therefore, an error of sight begetting an insane delusion, whose very character disclosed the alliance; and it becomes an interesting query whether, if we could have cured this woman's double diplopia, we should have put an end to the delusion which had taken possession of her. Professor Hagen furnishes us with a case, from the experience of Von Graefe, which gives an answer to the query. "A man, past middle age, had four years previously lost his sight in consequence of inflammation of both eyeballs. At the time when he came under observation the eyeballs were atrophied, and contained several calcareous deposits He had become subject to extraordinary sensations of light, which annoyed him night and day, and interfered with his falling asleep. Half a year before he had suffered from a severe emotional shock, after which the appearances of mere light and colour (such as coloured spots, red luminous balls, etc.) became so far modified as to assume, when he was most troubled with them, special forms, such as heads of horses and asses. He also saw human faces, resembling those he had been acquainted with, and believed that he was actually surrounded by these acquaintances. The operation of neurotomy was performed, and there were no appearances of light or colour, nor hallucinations, during the week following the operation, although previously he never passed a day without them."

There is still one point to which I would refer before concluding my remarks on the influence of body on mind.

It is well known that the mental phenomena which result from intoxication by different substances are not the same. These phenomena have not been studied with the attention they merit; but it is acknowledged that in the intoxication produced by alcohol, belladonna, opium, or cannabis Indica, the mental states differ greatly, and that the character of these differences may be called constant. These substances act differently on the body,—as we see in the dilated pupil from belladonna, and the contracted pupil from opium; and there are corresponding differences in their actions on the mind. Perhaps the mental disturbances which result from the long-continued use of intoxicating agents, resemble each other more closely than do the immediate psychical effects. Delirium tremens, as we see it, with its very distinctive and well-known mental disorder, is nearly always the result of the long and excessive use of alcohol; but a state differing little from it may result from a similar use of other intoxicating agents. Some of these, however, produce it more readily than others. It was even thought by Jungken of Berlin that alcohol distilled from the potato is more apt to induce this form of delirium than alcohol distilled from barley. As the potato belongs to the same natural family as the belladonna, he thought that some volatile principle passed over with the alcohol distilled from it, in very small quantity it is true, but still in sufficient quantity to influence the effects arising from its long-continued use.

The delirium of the exanthemata is in some measure of the nature of an intoxication. It is something more than such a delirium as attends a local inflammation with high fever. It is the result, to some extent, of a special toxic agent; and there is, depending on this, a difference between the delirium of scarlet fever and that of typhus, or measles, or smallpox. In this opinion I believe I am supported by our best practical physicians. No one, however, so far as I am aware, has attempted to describe the characters which these toxic agents respectively impress on the delirium which they may produce; but I venture to predict that, ere long, we shall have phenomena of this kind more carefully observed and analyzed than they have hitherto been.

Delirium, described broadly, is a "rapid flight and mutation of ideas, which the patient cannot command." "Consciousness," as Ideler expresses it, "seems to have been broken into fragments, which are thrown up in wild confusion by the flood." But I am myself satisfied that there may be and often is a method in this wild confusion; that there may be eddies, and rapids, and pools in the flood which throws the fragments up; and that there may thus be a sorting of them, which will give a character to the delirium.

This concludes what I have to say on the influence of *body on mind.* I have spoken chiefly of the graver aspects of that influence, because these are what I am led most to think of; and I have written of the subject as I am in the habit of thinking of it—choosing my illustrations chiefly from the domain of disease, or from that adjoining domain wherein we find the *morbi omissi* of Cullen—*quos omississe fortassis non oportebat.*

We pass now to a consideration of the influence of *mind on body*—in other words, to notice some of those corporeal phenomena which follow, and which appear to depend on certain operations of the mind. In considering this aspect of the matter, I think it will be found that we throw additional light on those actions of body on mind to which we have just been referring.

There is an involuntary bodily result of a mental emotion, which is so frequent and so familiar that it passes with little consideration; but it is nevertheless in its way a phenomenon quite as strange and startling as a convulsion, or a dance of St Vitus. I refer to blushing.

The particular emotions which may give rise to blushing it is not easy to define; but I am at least safe in saying that there is a close alliance among them. In other words, it is true, in a broad and general sense, that it is a special, and not an indefinite operation of the mind which brings to the cheek what Müller calls a "vital turgescence of the bloodvessels," and what the poet calls "a living blaze of blood." The emotion, perhaps, can be best described as a feeling of shame. Wounded modesty, a consciousness of being blameworthy, of being the subject of remark and observation, or of embarrasment in having to speak to strangers or superiors, and a host of things, differing yet similar, may call up this feeling of shame, which in its turn may call up the blush.

A more manifest physical effect of a mental operation we could scarcely have—the same mental operation tending always to produce the same physical result. As we think of it, we cannot help asking if it be not possible that other emotions produce effects on the body quite as real as this, though not so apparent. That it is more than possible we shall shortly see.

The feeling of shame, however, does not bring a blush to every cheek. In the sensitive, or the nervously mobile, it is surest to do so—not because the emotions are always stronger in them, but because they are less under control. Such persons are in what we have so often alluded to as a state of preparation or predisposition. There is comfort in believing that, as we get old and cease to blush, it is not altogether because we have lost the feeling of shame, but because the growth of other faculties of mind keeps the emotional ones more in check. Jeremiah, however, raises a misgiving as to the correctness of this view, when he says—"Nay, they were not at all ashamed, neither could they blush;" and when he adds, "Therefore, shall they fall amongst them that fall," he starts a doubt as to the advantage of great stolidity.

But, be this as it may, it will be agreed that we have in blushing a remarkable illustration of the influence of the mind on the body. We shall not have a less remarkable one, if we turn our attention from the warm blush of shame to the cold pallor of fear. When great or sudden fear falls on a man, every one knows the physical effects which follow—the cold shiver, the *cutis anserina* or *horripilatio*, the change in the physiognomy, the pallor of the face, the dry mouth, and the sharp pain over the heart.

It is here, too, as in all the phenomena we have examined—different men are influenced by the same emotion in different degrees. We have the *constitutionally* fearful and the fearless, the timid and the bold; but we have none whom fear causes to blush or to laugh, for when fear is strong enough to show itself by physical signs, these are always of the same character.

Under the influence of fear the mouth dries and speech becomes difficult; and Annesley tells us that this physical effect of a mental state has been turned to practical account by the jugglers of India. When a theft has been committed, and they are asked to find out the thief, they gather all the inmates of the house, give each some dry rice to chew, and make them spit it out on a leaf. That which the thief has chewed will be dry.

Hilarity and sadness, again, affect the body in very different but in characteristic ways. The first increases the respiratory movements and the circulation of the blood. The second does the reverse. This of course must influence the health of every part of the body. Prout shows that there is more carbonic acid exhaled in the excitement of joy than in the depression of sorrow, and Schweigger confirms this. The blood is thus changed, and with it the whole nutrition of the body. "Compare the man," says Bichat, "whose every hour is marked by grief, with him whose days are passed in peace of heart and tranquillity of soul, and you will see what a difference distinguishes the nutrition of the one from the other." Grave diseases of the body may thus be induced. They are so, indeed, more frequently than is generally supposed. And thus we have sympathetic corporeal, as well as sympathetic mental diseases. It would be a practical advantage, I believe, to the art of healing, if the mental phenomena which precede or accompany bodily disorders were more studied than they are. Not many think of the first signs of fevers as cerebral, yet it has been well pointed out by Georget that they are so to a great extent—the headache, the troubled sleep, the false sensations of heat and cold, the inability to fix the attention, the weariness or lassitude of the intellectual faculties, the indifference, which marks a feebleness of the emotional faculties,—what are these but cerebral and mental phenomena?

But we have not yet done with the corporeal expressions of the states of hilarity and sadness.

The first leads often to laughter, and the last to sighs, and sobs, and tears. These are bodily expressions of mental states, whose utterance is plain and distinct. Who has not put his hand over his heart and said that it felt like a lump of lead, when the sorrow that is brought by the death of friends had fallen upon him? Who has not felt uneasiness and distress over the stomach, when stung by remorse or a qualm of conscience? Who has not felt his appetite *suddenly* go by the *sudden* receipt of bad news? Who has not felt it permanently affected by a continued sorrow, which he could not throw off, by hope deferred, or by prolonged anxiety? These are all bodily expressions of mental states. Their utterance perhaps may be less loud and distinct, but still it is not doubtful. He, of course, who has never known a sorrow in his life will not have felt, and may not understand, what is here described. With such a being, however, as Reid says, "it is scarcely possible to feel a sense of friendship or even of fellow-creatureship," and it is unnecessary to assume his existence.

There is a lesson in all this which is plain. Certain emotions of the mind act healthfully, while others act injuriously on the body. We should, therefore, exercise and cultivate those which do us good. Cheerfulness, for instance, is a state of mind which should certainly be cultivated into a habit. The muscles are strengthened by exercise, the memory is strengthened by exercise, and so is this state of mind—a state conducive to the health of other states, fortifying the whole. It has been well said by John Reid, that "A man may be merry on principle, and make a point occasionally of taking a laugh, as others do a walk, for the benefit of his health." If this be true, it is a justifiable hypocrisy to put on the appearance of cheerfulness, since, "by seeming gay, we grow to what we seem."

One of the common physical expressions of sorrow is weeping. In this we find a mental operation causing the secretion of a gland to be greatly increased. We have many other illustrations of the same thing The cry of a child, for instance, will suddenly fill a mother's breast with milk; and most of us have an old recollection of the effects on the mouth of an observational fit opposite a pastry-shop window. Such phenomena as these are so familiar to us, that we fail to see how deep their meaning is. Do they not, for instance, render it in a high degree probable that other glands are similarly influenced, though we have not the ocular demonstration of the influence, and though it may really be of a much slighter character, and that our thoughts and emotions may thus in the widest and broadest manner operate on our whole bodily condition?

The salivary glands are usually excited to an active secretion by the motion of the jaws in mastication; but the stimulus may come from the stomach, as in the case alluded to by Burdach and observed by Gairdner, where the œsophagus was divided, and where five to eight ounces of saliva flowed into the mouth every time that soup was injected into the stomach. This was a sympathetic action between different but related parts of the body. But the same physical result may follow a mere mental operation, as we knew, when we longed as boys to eat the cakes we looked at. It was not even necessary, however, that we should look at them. We could call up the longing by simply thinking of them, and the same flow of saliva would result. So it is that some people, by merely thinking of an odour which they greatly dislike, may sicken, vomit, and faint, which is certainly a strong corporeal expression of a purely mental operation. If syncope occurred, as it might do in such a case, we should have a particular mental act producing an effect on the body, which in its turn so acted on the mind as to cause complete unconsciousness or utter fatuity for the time being.

The recollection of physical pain, or of mental anguish, may produce similar effects. The body may fall down under the disturbance of the emotions thus excited, as it would before a bullet; and, if there be organic disease about the heart, or much general weakness and exhaustion, the body may lie where it falls, kept there by the hold of death.

The physical effects of what Burdach calls *l'idée de la fonction* are best seen, perhaps, in the sexual organs, as for instance in the *tensio phalli, visâ muliere nudâ, etiam in insomnio.*[1] When we get to pathological states, these strange connexions of mind with the sexual or reproductive organs assume a high practical importance. It is certainly much safer to have the mind intensely and continuously determined to a problem, than to this passion. There are both mental and physical results from castration, and the eunuch is not so much a man in his mind as he would have been had he been left unmutilated in his body. He becomes psychically effeminate, so that of a strong-minded female in the presence of such a being, we might almost properly say with Sterne, *Hic mulier, hæc vir.*

The face has been called, by Georget I think, *the mirror of the mind.* So completely are the movements of the muscles regulated by the emotions, that in the actions of the former the last may be read. What else but states of mind do we learn from the sparkling eye, the smile, the simper, the smirk, the grin, the frown, the scowl, the depressed eyebrows, or the tightened lips? Indeed, as the *Adventurer* puts it, "the predominant passion may generally be discovered in the countenance, because the muscles by which it is expressed, being so often called into action, acquire power, and overrule the others, so that the expression remains when the passion is suspended." If certain emotions are much exercised in very early life, the bones themselves are undoubtedly shaped by the play of the muscles on them. The moral from which is, that "Those who wish to be lovely should learn early to be good;" since it is certain that faces are made charming or repulsive by the habitual action of the mind on the muscles of expression, especially in early life.

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[1] Maudsley, Phys. and Path. of the Mind, p. 241.

It is nothing but an extension of this thought to point out how much our very language is influenced by a recognition of this action of mind on body. To leap with joy; to be dried up with envy; to be consumed with remorse; to be weighted with sorrow and bent with grief; to be down in the mouth, or sick at heart, or chop-fallen with disappointment; to have one's stomach turned with disgust, or one's mouth made to water with longing; to turn white as a sheet, to have the skin creeping, or to shake with fear; to open the mouth or look blank with amazement,—phrases like these are not poetic metaphors, but dry physiological truths.

In these papers a state of mind has often been spoken of as *the cause* of a state of body, or *vice versa;* but the cause, of course, had in its turn a cause, and so on backwards—to what we cannot often tell. It seems desirable, therefore, to point out that, in speaking of *causes* here, little more is meant than related antecedents. We have, indeed, not yet travelled far beyond this, but the journey we have made may nevertheless be important and productive of useful discovery.

Up to this point we have alluded only to those influences of mind on body which are involuntary, or nearly so; but there are others which we can bring about at pleasure.

I do not refer to those obscure results of will or attention which are disclosed in such things as the impaired speech that follows loss of hearing, when the speaker becomes unable to regulate the pitch of his voice. The brain, in such cases, can still send a message to the muscles of voice to act in this or that way, but it is not informed through the ear whether the instructions were just what they should have been to secure the proper pitch, on which information further orders to the muscles of voice would be founded. We are not conscious of giving any attention to this matter, though we really do give it. But it is not to such phenomena I refer when I speak of the influence of mental on bodily states which we can exhibit at pleasure. I refer rather to the effects of voluntarily and forcibly directing the attention to particular bodily organs. Sir Henry Holland, writing in 1852, says:—"The influence of the will on the voluntary organs, and of the passions and emotions of mind upon other parts of the animal economy, have long been the subject of study. Not equally so the influence of the consciousness thus directed by voluntary effort to particular organs and parts of the body—a faculty which, to a certain extent, the mind undoubtedly possesses." "It may be exercised as a mental act, without the suggestion of previous sensation from these parts," though it may require some effort and habit of mental control so to exercise it. "Stimulated attention," he says further, "will give a local sense of arterial pulsation where not previously felt, and create or augment those singing and rushing noises in the ears, which probably depend on the circulation through the capillary vessels."

A similar concentration of consciousness on the region of the stomach creates in these parts a sense of weight, oppression, or other less definite uneasiness. Perhaps there are effects produced in the stomach by simply directing the attention to it, like those we can actually see produced, by the play of the emotions, in the salivary glands or in the mammæ.

If we direct the attention resolutely to the brain itself, there arises an indefinable feeling of tightness, uneasiness, and weariness, which forces us to discontinue the experiment. Not unlike this feeling of weariness—yet differing from it, being something more—are the feelings which follow the concentration of the attention or consciousness on one of the limbs—say the leg,—"vague feelings of tension or tingling," or "sensations of heat and cold, hardly definite enough for description, but sufficiently so for proof."

Such cases, it has been observed, "where it is difficult to prove more than a change or increase of feeling in the parts affected, may appear ambiguous in evidence. But that some real alteration takes place, either in their nervous condition or circulation, or both, is probable from the distinct evidence of this in other instances of the mental consciousness thus locally directed."

If these phenomena are called obscure, it is an error. The explanation of them may be obscure, but they themselves are unmistakable realities. Beyond the phenomena, however, it is not our present purpose to go. They are adduced here only as a further illustration of the relations of mind to body, and of the influence the first may have over the last. Were we to attempt more, I fear we should only mortify pride and reveal no useful truth.

ARTICLE II.—*Injury to the Cervical Vertebræ.* By J. FAYRER, M.D., F.R.S.E., C.S.I.; Surgeon, Bengal Army; Professor of Surgery in the Medical College of Bengal.

ON the evening of the 12th May 1871, Mr —— brought his child, an intelligent and interesting girl of 6½ years of age, to me, with the following account of an accident that had happened to her that day about 12.30. She had been taken up by the head by a grown-up person, and so lifted on to a table. The child told her father that she felt pain, heard something snap, and found that her head was twisted to one side, and that she could not return it to its natural position. She went home at 3 P.M.; her head was then twisted to one side, she had considerable pain in the neck, and there was a bony projection at the lower part of the back of the neck on the right side, and a little above its junction with the shoulders.

The father and mother, being alarmed at the child's condition, brought her to me at about 7.30 P.M., when I found her to be in the following condition:—

She is a slight but healthy child; her father and mother and other relatives assert that there was no deformity before the accident. Her head was slightly inclined forwards, and her face twisted towards the left side.

On examining the neck and manipulating the injured part, she said she felt some pain, but it was evidently not very severe, as she allowed me to move her neck and head freely. There was a marked bony prominence, which I took to be the right lateral process of the sixth or seventh cervical vertebra. There was considerable mobility, and, considering the nature of the lesion, wonderfully little pain. The head could be rotated in either direction; considerable flexion and extension were practicable, but the distortion remained, and the prominence was unchanged. There was neither swelling nor contusion about the neck or face. The child seemed well in other respects, and bore the examination with great patience. There was no evidence of injury to the spinal cord.

There was considerable mobility, as I have said, but I could detect neither crepitation nor movement as of fractured processes in contact, neither could I, by extension of the neck and rotation, make any permanent impression on the distortion.

The absence of pain led me to suggest the possibility of some previous accident, the results of which might have been unnoticed; but the father was most positive in his assurance that such was not the case. The girl was equally positive in her statement that the injury was caused as I have described to-day. I know the child well, and believe that she had no previous deformity of the neck.

I diagnosed the injury to be dislocation of the articular process of the fifth or sixth from the sixth or seventh cervical vertebræ on the right side. I examined carefully for fracture, but beyond the fact that there was more mobility than might be expected in dislocation only, could detect none.

On the 13th May, in consultation with Professors Ewart and Cutcliffe, I again, under the influence of chloroform, made a careful examination, and after continued and careful extension of the neck, with counter-extension from the shoulders, effected a change in the position of the bones, and partially returned them to their normal position. But during the manipulation it became evident t there was not only dislocation, but fracture of the transverse process; and, after returning the parts to as nearly as possible a natural position, it was not deemed prudent to use any further interference, and the child was placed in the recumbent posture, with instructions to keep her so, and support the head on either side with a pillow stuffed with sand.

14th May.—She is well, and free from pain; the face has a very slight inclination to the left shoulder, but it is easily straightened. The head and neck are movable in all directions. A slight prominence can still be felt, but it disappears on rotating the head and pressing it backwards.

I directed that the child should be kept on her back, and the head and neck laterally supported, as I have described.

19th May.—The child is well and free from pain; a certain amount of distortion remains.

It appears that the child was lifted from the bench on which she was sitting to the table, at some feet distance; she was raised suddenly by the head, felt sharp pain, and heard a snap in her neck, as of a bone going out of place.

There can be no doubt that in this sudden and violent transport from the bench to the table, raised by the head, some sudden rotatory movement, aided by the weight of the unsupported body, caused dislocation of the articulating process of the sixth from the seventh vertical vertebra, and probably fractured the transverse process near its junction with the body of the bone.

ARTICLE III.—*Introductory Address, delivered at the Opening of the Edinburgh School of Medicine, on the 1st of November* 1871. By THOMAS ANNANDALE, F.R.S.E., Surgeon to the Royal Infirmary, and Lecturer on Clinical Surgery.

GENTLEMEN,—My first and pleasing duty to-day is to offer you, in the name of my colleagues, a hearty welcome to this School of Medicine. I welcome back with pleasure those of you who have been with us before. Your return is the best possible proof that you are contented with, and I trust proud of, your School and its teachers; and, therefore, your presence on this occasion is an encouragement to us to persevere in our endeavours to give you sound instruction. I ask you to continue your studies in the same excellent manner as you have hitherto done; and especially I would ask you to set an example to, and assist in every possible way, those gentlemen who to-day join us for the first time. Most of you must remember the feelings with which you first entered on the study of Medicine. How new and puzzling many things appeared, and how even despair sometimes seized you on discovering the vastness of the task you had undertaken; and yet, by the aid and encouragement of others, and by your own perseverance, these difficulties were gradually dispelled, brighter and more encouraging became the path, and you are now matured medical students. With the recollection of your own first difficulties, I again ask your best sympathies for your junior associates. By endeavouring to guide others with proper tact and aid you will benefit yourselves, earn the gratitude of your fellow-students and their friends, and bring credit to your School and its teachers. If there are any here who have neglected or been remiss in their work, I would earnestly beg them at once to endeavour to make up their lost time. Unless they begin to work now, it will become more and more difficult for them to gain the ground which they should before have possessed; and although they may in time, by a process of cramming, obtain diplomas, they can never expect to practise their profession with credit to themselves or their School, or with safety to, or the confidence of, their patients.

In giving a sincere welcome to those of you who come here for the first time, I would ask you to join our ranks with a thorough determination to work and to master the details of the profession you have chosen. If you come with this determination you will, I feel sure, receive every encouragement and assistance from us your teachers. In selecting Edinburgh as your *alma mater*, you have chosen a school second to none. The reputation of our University and Medical School is no report of yesterday. The many eminent names which have been connected with them are as enduring as the Castle Rock; and I have no hesitation in saying that their present representatives are worthy of the position they occupy. Few changes, I am glad to report, have taken place in the staff of our School since last we met; but I must refer to the retirement of one of your most respected clinical teachers. Dr Gillespie, after a long and faithful service in connexion with the Infirmary, has thought it right to retire from active service. I am sure I express the feelings of my colleagues, and of those of you who have previously attended this School, when I assure Dr Gillespie that in leaving us he has our true and well-deserved respect and esteem, and that we wish him a long and happy life to enjoy the professional and social position he occupies in this city. As a junior colleague of Dr Gillespie, I have invariably received from him the greatest kindness and courtesy; and I am glad to have this opportunity of acknowledging and sincerely thanking him for it.

In entering upon the study of Medicine, you are undertaking no easy journey, and unless you are prepared to encounter and overcome difficulties, I would use the expressive word of the immortal *Punch*, and say to you, "Don't," but rather try to discover some other occupation more congenial to your inclinations. The time allowed for your journey is some four years, and the ground you are expected to go over in this time is extensive and varied. Chemistry, Botany, Natural History, Physiology, Materia Medica, and last, but not least, Anatomy, are some of the incidents to be mastered on the way before you can properly understand the practical branches of your profession. None of these incidents are to be despised; some of them may seem unimportant and unconnected with the object of your journey, but you may be sure that they are all useful, and will prove of service to you afterwards. It is the abuse (if I may use the expression), not the use, of some of these which is a hardship to the students, and I trust that, ere long, some of them may be included in the general education of a gentleman, and their acquirement be therefore no longer a necessary part of the Medical Curriculum. The abuse of lectures and lecturing is another real hardship which you have as yet to encounter, but I sincerely hope that, in future legislation on medical education, more freedom to the student will be the rule, and that it will no longer be imperative for him to attend a large and fixed number of lectures in a session.

Lectures properly selected and moderately attended are, in my opinion, most valuable; but the incessant and continuous lecturing of the times is wearisome to the student, harassing to the teacher, and certainly not calculated to supply the best instruction. It may be truly said of the student nowadays, in the words of a Latin author—

> "He that desires this wished goal to gain,
> Must sweat and freeze before he can attain."

I would wish the student to have more time and greater facilities for study in the hospital, more time for work in the dissecting-room and practical laboratories connected with Physiology, Pathology, and Chemistry, and more tutorial assistance.

In making these remarks, it is certainly not my intention to alarm you. I only desire to make you think seriously of what is before you; and if you will work steadily and perseveringly during your student-days, I can with great confidence assure you, that success as to your examinations and the future practice of your profession will result.

Let me remind you also, gentlemen, that in joining this School you become a part of it, and that, therefore, you are bound to do everything you can to uphold its character and add to its renown. In the various classes you are required to attend you will, I have no doubt, receive advice as to the best methods of studying the particular subjects taught in them, and I will therefore content myself by offering you a few general remarks in connexion with your future studies and position as medical students. In the first place, try to acquire a regular and steady method of working, so that you may daily add to your knowledge, and gradually prepare yourselves for further and more advanced studies. Steady work of this kind will always succeed in the end. In the fable it was not the swift but careless hare that won the race, but the persevering tortoise. In order to carry out such a system of study your habits must be regular, and, above all, your health must be considered and attended to. It is not necessary for me to give you a lecture on the best way to keep your health. If you do not already know how best to do this, a little experience and observation will soon teach you what is good and what is bad; whether or not you should rise early in the morning or go to bed late at night; and the amount of knowledge you can imbibe in the twenty-four hours without injury. The only advice I have to give you on this subject is, Don't get up early in the morning and sit up late at night at the same time, for you will find this a process of burning the candle at both ends, which you know is not a healthy or desirable proceeding. Some recreation is absolutely essential. Those of you who desire active bodily exercise will find it to perfection on the Pentland Hills, Arthur Seat, and other noble walks around this city; for athletes there is the University gymnasium, an excellent institution if taken in moderation; and for those of you who have military aspirations, there is the University company of Volunteers, where, I am sure, you will receive a hearty welcome from its much-respected and veteran commander, Sir Robert Christison. Endeavour, also, to devote some of your leisure hours to the improvement of your general education by a study of literature, art, general science, and the modern languages. The mind, in order to keep healthy, requires a change of food occasionally, and you will find no better change of diet for it than such studies; while, at the same time, you will best fit yourselves for taking the position in society which members of our profession will always receive if they are worthy of it. Remember that you are not merely working to pass examinations, but that you are preparing for the future practice of your profession. It is for this latter reason that the more practical studies are of such importance, and you cannot be too diligent in the wards of the hospital, in the dissecting-room, and pathological theatre. It is not by walking through the hospital, or looking at the work going on in the dissecting-room, that you will gain practical knowledge; but you must make a careful study of disease in the former, as will be explained to you by your clinical teachers, and in the latter you must employ the scalpel and forceps with perseverance and care. Let me quote to you the following words of Dr Latham, addressed to his clinical students:—

"So, in entering this place, even this vast hospital, where there is many a significant, many a wonderful thing, you shall take me along with you, and I will be your guide. But it is by your own eyes, and your own minds, and (may I add) by your own hearts, that you must observe and learn and profit: I can only point to the subjects, and have little more to say than 'see here and see there.'"

Such work will bring you true and sound knowledge, which will be serviceable all your lifetime.

The study of Medicine is more arduous than formerly, for much more is required of the student; but, on the other hand, the facilities now afforded make his labours comparatively easy, if only he will work. Much has yet to be learned in our profession, and there are many fields of research in connexion with it which call for earnest workers. The honour of assisting in this work is open to you all, and it will, I trust, be an object of ambition—to some of you at least—to embrace such honour in the future.

If in the course of your studies your inclinations lead you to investigate some special subject, continue such investigation with perseverance, especially if the subject be one likely to afford original and new material. Although you may only be able to work at it occasionally and for short periods, you are sure in time to gain results, and such results may be most valuable as additions to our knowledge.

I know many instances where such investigations commenced in student-days, and, persevered with, have brought great reputation and credit to the worker, and have largely benefited science. The mere acquisition of knowledge or facts is not sufficient. You must learn how best to apply or use knowledge, so that it will be serviceable to you and to your patients. Cowper has truthfully described this in his *Task*:—

> " Knowledge and Wisdom, far from being one,
> Have oft-times no connexion. Knowledge dwells
> In heads replete with thoughts of other men;
> Wisdom in minds attentive to their own.
> Knowledge, a rude unprofitable mass,
> The mere materials with which wisdom builds,
> Till smoothed and squared and fitted to its place,
> Does but encumber whom it seems to enrich.
> Knowledge is proud that he has learnt so much,
> Wisdom is humble that he knows no more."

The practice of " taking notes " is a favourite topic of advice to students, and is no doubt most useful, and its results valuable, if you take notes of the right things in the right way; but do not acquire the habit of taking notes of everything, or you will on many occasions neglect opportunities of observation or demonstration which would have made a more lasting impression on your mind than any number of notes. Do not take notes of what you can read with more advantage in print, but take diligent notes of any original observations—of any subject you do not understand (in order that you may master it at your leisure); and, above all, take careful notes of all you see and hear in the hospital and pathological theatre.

An inspection of students' note-books would, I fear, not always reveal the owner's constant devotion to the subject treated of. Studies of nature as met with in the dissecting-room, sketches of professors or lecturers, various studies of the features of the girl or girls " we left behind us," and even in some instances lines of original poetry, have, if I am rightly informed, occasionally been found in the note-books of medical students. This particular mixture of the arts and sciences is not be encouraged.

Attendance at debating societies is generally also referred to in addresses such as the present. This practice is most serviceable, provided you take part in the discussions and working of the society, and at the same time study the subjects of debate. Talking for mere talking's sake can do you no good, and I know from experience that the talking on these occasions is not always to the enlightenment of the audience or the advancement of science. In fact, I have sometimes listened to debates which had much the same result as a celebrated discussion which took place in the eleventh century. The discussion was, "When a hog is carried to market with a rope tied about its neck, which rope is held at the other end by a man; whether is the hog carried to market by the rope or by the man?" This question was debated for a whole century by many learned men, but it still remains undecided. As students of this School you have the privilege of joining the Royal Medical or Hunterian Medical Societies, in either of which you will have an excellent field for practising and perfecting your powers of debating. In your debates and in the differences of opinion which will occasionally arise in regard to other matters, train yourselves to fight honourably. If your opponent is worthy of you, fight him honestly and with fair weapons; and although you may not come to an agreement, you will learn to respect one another. If he is unworthy, avoid him. Take Socrates's advice, who says, "Suppose an ass were to kick me, would it be right or becoming in *me* to kick him again?"

A student is at first often at a loss as to what books he should study. In regard to text-books, I would advise you to study those recommended by your various teachers, but the fewer of these books you purchase the better. A certain number of them is necessary; but if you have the means and wish to form a professional library, buy the best and standard works on the different subjects connected with Medicine, for these will always be of service to you, and a study of them will give you knowledge direct from the head source. I offer no apology for here addressing a word of warning to the young student. It is occasionally the sad experience of my colleagues and myself to observe, and be helpless to prevent, the complete disgrace and ruin of a student who has joined us with bright prospects before him, but who, instead of realizing them, has given way to temptation, neglected his work, and brought himself to misery. You will all have temptations, many of them difficult to resist. Endeavour from the first to resist them, and their power over you for evil will soon become ineffectual; but once give way to them and it will be difficult, often impossible, to escape their effects.

> "Motions to ill resist in their first grass,
> Lest, gaining growth, they shoot into the ear:
> Custom to sin at length will make you pass
> That for a bat which was before a bear."

Think of your friends at home and their anxiety for your progress and success. If you fail to do your duty, think how great will be their distress; but if you become good and successful students, how pleasant will it be to feel that you have their esteem and approbation.

As Students of Medicine, gentlemen, you have all become connected with a great profession. You are no longer simple citizens, for your connexion with the medical profession has placed you in a special position, and has devolved upon you duties which you cannot in honour neglect or despise.

I would first speak of your duties to the public. The important bond and sympathy between the public and our profession is, although sometimes ignored, now generally acknowledged and valued. Members of our profession, if they respect themselves and their profession, have a well-merited and established position. The possession of this position gives to our profession a power which is, perhaps, greater than is possessed by any other body of men, and yet I do not hesitate to say that this power is used with the greatest moderation, delicacy, and sanctity. It is, therefore, much to be regretted that many of the public have little sympathy with medical students. It would almost appear that many people take their ideas of a medical student from Dickens's characters of Messrs Bob Sawyer and Benjamin Allen, in "Pickwick," for it is too common to hear such a remark as, "What else could be expected—he is a medical student." Such wholesale condemnation on the part of the public is most unjust, and I cannot imagine why our particular students have been selected for it.

Medical students, as a body, will stand the test with any other body of young men, and are not in any way inferior in intellect, manners, or morals. There are bad students and men in every profession and society, but it is most unfair to take such men as types of the class or body to which they belong.

With all respect, I would ask from the public justice and some little forbearance for medical students, and would remind them that they will be their future medical attendants; and I would further remind them of the dangers to which medical students are exposed in the prosecution of their studies, dangers which affect no other class of students. In the last few months, two much-esteemed students of this School have lost their lives while endeavouring to relieve human distress; and how many others have similarly perished! And, gentlemen, let me urge you to try and gain the esteem of the public by your conduct. Learn to respect yourselves and your profession; and in this way prove that you are worthy of your position.

In your general intercourse with the public, avoid as much as possible special professional conversation. It is not desirable that any mystery should be made in regard to our profession—and there are times when professional explanations are very right; but there are many subjects unsuitable for conversation and discussion in general society; and I have sometimes heard it alleged that medical students are too fond of talking "shop," and making themselves disagreeable, by reference to various horrors or scenes which had come under their notice. In defence of students I must say, that not unfrequently they are encouraged in this conversation by their audience, who, with a morbid curiosity, seek to learn things which partake somewhat of the sensational. Be simple in your professional conversation, so that when it is necessary to make explanations to non-professional people, you may be able to do so in language intelligible to them.

A few years ago, when travelling in a public conveyance, a young gentleman, with a thick comforter folded round his neck, entered the carriage. As he seemed very miserable, one of the company asked him if he was ill. The young gentleman replied in words somewhat like the following:—"I am suffering from a severe attack of acute catarrh, complicated with bronchitis, and attended with copious expectoration!" If this learned gentleman wished the company to know that he was a medical student his object was certainly attained, but it would have been better taste if he had simply said he had a cold.

The intentional mystification of patients and the public by the employment of unintelligible words or expressions, is a species of humbug quite unworthy of the members of a great profession.

Be liberal-minded in the widest sense of the term; and if you wish to be happy in your future practice, avoid all tendency to what is termed gossip. Much mischief results from this practice, which is by no means confined to a certain class, as is sometimes asserted in every kind of society; but a medical man hears and sees very many things which should be sacred, and if he once gives himself to the practice referred to, he is no longer fit to be the trustworthy associate and friend of his patients.

To the patients who come under your care or observation in hospital and other practice, fulfil the golden rule, and "do to them as you would be done by." Ingratitude on their part you may sometimes meet with; but if you honestly do your duty to them, you will receive many happy and pleasing testimonies of gratitude, which will more than compensate for the former, and be a real encouragement to you to persevere in your good work.

In the second place, you will best fulfil your duty to your teachers and School by earnestly working and becoming good students. We, your teachers, hold a responsible position towards you, and you will much lighten this responsibility by trying to give us as little anxiety as possible. Do not look upon us only as your teachers, and possible future examiners; but consider that we are your friends, both willing and anxious to interest ourselves in your welfare, and teach you your profession to the best of our ability.

The conduct and success of students influences very much the reputation of the school to which they belong. Remember this, and do not let anything on your part tend to diminish the already well-earned reputation of the Edinburgh School.

Lastly, gentlemen, there are duties to yourselves and associates. I have asked the seniors among you to assist and encourage the juniors, and I now ask the juniors to respect their seniors, and cultivate their friendship and assistance. I am no advocate for the system of fagging, as it used to be carried out in some of our public schools; but I would not object to see some milder form of connexion between the senior and junior students. I would not have the juniors compelled to black the boots of the seniors in the evening, or prepare their hot toast or rolls in the morning, but I would have them place themselves under the care of the seniors (provided the latter are good students), who would teach them to work regularly and profitably, and would at the same time keep them out of serious mischief.

You are all working for the same end, and it should be your endeavour to work together in good-fellowship; and do, gentlemen, try so to train and educate your actions and feelings now, that in the future you may assist in banishing the reproach that the members of our profession are too much given to strife with one another.

In conclusion, let me remind you, in the beautiful words of Longfellow, that

"Life is real, life is earnest,
And the grave is not its goal:
Dust thou art, to dust returnest,
Was not spoken of the soul."

ARTICLE IV.—*A Cause of Heart Disease in the Army.* By FRANCIS W. MOINET, M.D.

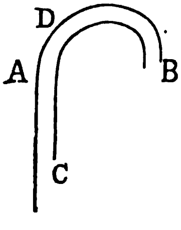
IN studying cases of heart disease, we frequently meet with some in which the lesions are so serious as to indicate themselves by symptoms which the merest tyro in diagnosis could hardly fail to appreciate, but which puzzle us on account of our inability to detect the cause—at least, a satisfactory one; for instance, in many cases of hypertrophy of the heart, dilatation and aneurism of the aorta, we console ourselves by attributing them to diseases of the arterial coats, Bright's disease, etc.; and although not for a moment do we lightly consider the grave effects which may result on the organ of circulation from these causes, we feel that they do not, in a conclusive manner, prove themselves to be the first causes in all cases—some, perhaps, not showing the faintest connexion between cause and effect, although, no doubt, they may aggravate or accelerate these pathological conditions.

It was this feeling which, after the perusal of Mr Myers's essay on Diseases of the Heart among Soldiers, led us to examine somewhat minutely the anatomy of the organs of circulation, in the hope of thereby satisfying ourselves as to the correctness of a theory which seemed to us to offer an explanation of these cases more reasonable than any we are acquainted with.

In works on anatomy, the heart is described as being contained in a bag called the pericardium. Now, if we examine its connexions to this bag, we find that it is only attached and held in position at its upper extremity by the large bloodvessels and the reflexion of the pericardium; so that the heart is always more or less suspended by these attachments in the pericardium when the body is in any position but the recumbent.

From this we see that the aorta has attached to it at the commencement of its ascending portion a weight, which, according to Reid's investigations, varies from about 8 to 10 oz. in the female, and from 10 to 12 oz. in the male. This weight will naturally be increased to some extent by the amount of blood contained in the organ when it is in action, and by the recoil after each contraction of the ventricles.

Then, if we look at the aorta, which takes the form of an arch, with this weight attached to one extremity, we will see that this mechanical arrangement places it under certain disadvantages in peculiar circumstances; for although, by Nature's wise provision, any slight change which might result in the curve of the aorta by its being drawn down by the weight of the heart is probably compensated for by the time we require for sleep allowing the vessel to regain its elasticity, still we must perceive that any circumstance acting so as to increase this weight must necessarily entail very serious consequences on the arch of the aorta. For instance, take A B as the arch of the aorta, and C the weight or heart attached, we find that the weight C will tend to diminish the radius of the arch, and render the angle of the curve more acute, thus increasing the opposition to the current of the blood, especially at the curve D. What will happen then? Hypertrophy of left ventricle, dilatation of the aorta behind the point of obstruction D, affections of the aortic valves, and the risk of aneurism of the aorta at the commencement of the arch will be increased, thus entailing a series of very grave results.



First, as to the position of the heart: it hangs obliquely—simply due to its point of attachment, and not because of receiving support at any other point besides that.

Does the diaphragm assist in its support? Very little if any; because in every inspiration it descends, while the heart is raised; so that, during inspiration at least, it has no part in its support, and little, if any, during expiration, because it is the side of the ventricle which comes in contact with the diaphragm, which, being lax, will yield before the heart's weight, thus affording it only a nominal support, for, except in the case of children, the diaphragm is more a muscle of inspiration than of expiration. Again, the greatest amount of exertion is always made during inspiration, so that the heart is more freely suspended then than at any other time. If we now examine the pulse, we will obtain from it proofs that in certain positions of the body the heart has less support than in others. Graves, I think, was the first to point out the difference in the pulse in the erect, semi-erect, and recumbent positions. It is most frequent in the erect position—the difference being from six to fifteen beats in the minute—from which he deduced the conclusion that the maximum of strength and the minimum of frequency are attained together; and he applies this fact to the explanation of the relief produced by the horizontal position in syncope. To account for this, the heart must be either placed in a more favourable position for carrying on its work, or the demand for its work is diminished; or, what is still more probable, it is a combination of both these conditions which renders the strength of the pulse greater and its rapidity less in the horizontal position than in the erect. First, let us consider how the position of the heart has anything to do with this fact. In the erect position it is, as we have already said, suspended, receiving only protection and facility of movement from the pericardium, but no persistent support at any part; while, in the horizontal position, the heart lies on the pericardium and lung, which gives it a *point d'appui* for its action, and enables it to act with greater force; this partial support is the only one useful and free from danger, because, if it exceeded this, the action of the heart would be interfered with; but in this case the small amount of interference with its action is more than compensated by the purchase it gets during each contraction from this point of resistance. Second, the other cause at work is, that the waste of tissues is less in the recumbent position, the whole muscular system being in as complete a state of rest as is possible; hence the work of repair does not require to be so much hurried. Third, the heart is also relieved in the horizontal position, from the fact that the mere weight of the column of blood in the ascending aorta and vessels of the head and neck has not to be overcome, the force required to propel the blood perpendicularly upwards being necessarily greater than that required to propel it on a level; this also relieves its work.

Thus, we see that, in the erect position, the heart and aorta are placed under certain disadvantageous circumstances. The heart has to overcome during each contraction the weight of the column of blood in the ascending aorta, and so requires to act with more strength. Still more so, if exercise is taken in that position, especially exercise of the upper extremities; at the same time, the arch of the aorta is exposed to the risk of having its curve made more acute by the weight of the suspended heart; and, the force of the current of blood being increased, it acts all the more speedily at the point of obstruction, viz., the angle D; so that certain external circumstances, taken in conjunction with this mechanical arrangement of the heart and aorta, come to be considered as important causes of disease of the organs of circulation. Starting from this point—that the erect position places the heart and aorta in circumstances favourable for the development of certain serious lesions—we will examine and see under what conditions the risk of the formation of these lesions is increased.

First, of a certainty, comes long-continued maintenance in that position, especially if constrained by rule or dress. Secondly, exercise of the upper extremities while in that position; and it is because these two unfavourable conditions are so prominently met with in our foot regiments, that we have headed this paper A Cause of Heart Disease in the Army.

All physical exercise increases the rapidity of the circulation, as the part exercised, or in which the greatest waste of tissue is taking place, of necessity requires an increased supply of blood to repair that waste. Hence, in using the arms in the erect position, if indulged in to too great an extent, the heart is stimulated to increased work under adverse circumstances, the curve of the aorta being rendered more acute by the heart's weight offering increased resistance at the point D, and the heart acting with greater rapidity keeps up the strain at that point more continuously; so that it tends gradually but surely to weaken the elasticity of the middle coat, and renders the angle at D more acute, which, when it happens, causes dilatation behind that point, etc.; and so much the more surely and speedily does this train of evils follow if the aorta is in the least degree affected with atheroma, which not only hastens these evils, but, as may easily be conceived, adds aneurism as another very probable result, as occurring at the point D, where the force of the blood is most directly received. Not only is the strain on the heart increased by the necessity for more work, but, at the same time, a mechanical obstruction to the flow of blood is caused by this arrangement of the parts when it is kept up too long; and this danger is augmented, we believe, by the constriction caused by the soldier's accoutrements, as Mr Myers has shown in his essay; but that this constriction due to the uniform should be the sole cause of the prevalence of heart disease in the army cannot be admitted.

Mr Myers has shown, from his careful examination of cases of incipient heart disease in the army, that the first lesion distinguishable is hypertrophy, which is just what we would expect from our theory of its cause, dilatation of the aorta probably occurring at a later date — at least, it is not so easily diagnosed in its earliest stage as hypertrophy. This cause of heart disease is of course at work in others besides in soldiers—as in our labouring population, etc.—only we have not in them the same opportunities of watching the gradual occurrence of the symptoms of these affections in their earlier stages, many not seeking relief until almost *in extremis*, and then we have to content ourselves with noticing the existing changes, as we can gain little reliable information as to the origin of their maladies; but in the army, where these changes have been carefully watched and studied from their very beginning by Mr Myers, we have more confidence in speaking of them; so that his careful observations have the more weight as they directly bear on the point in question, and, as he made them in support of his theory, cannot, when applied to ours, be accused of any partiality.

If our theory is correct, we should expect to find that the cardiac lesions most frequently met with among soldiers are disease of the aortic valve, aneurism, especially of the ascending aorta and arch, and also we would expect that these lesions occur more frequently in the army than in the civil population in proportion to the number of cases of heart disease. The diseases of the heart most common in the army, according to Mr Myers, are hypertrophy, aneurism, and disease of the aortic valves; for, from post-mortem records which he made at Netley, he found that in 97 cases valvular lesions occurred as follows:—Of aortic valvular disease, 50; mitral, 25; mitral and aortic, 22. He then quotes the "British and Foreign Medico-Chirurgical Review," vol. xiv., as showing the comparative frequency of these valvular lesions in civil practice. Total number of cases, 673: aortic valvular disease, 192; mitral valvular disease, 205; aortic and mitral valvular disease, 259.

From this we see that, in the cases taken from civil practice, the majority have both sets of valves affected, and that the mitral alone are more frequently attacked than the aortic, showing that aortic valvular disease is at least more common in the army than in the civil population. This is explained by the strain upon the left ventricle, from the long-continued and frequently-repeated exercise with the rifle rendering the aortic valve more liable to be affected, and also by the dilatation of the aorta behind the point of obstruction at the angle D tending to make them incompetent. Next in order we would expect that aneurism of the aorta would have a prominent position as one of the diseases of the circulatory system in the soldier, and so we find it is; and from what we have said of the mechanical arrangement of the parts, we would naturally expect to find the arch the part most subject to aneurism, and next in point of frequency the ascending portion of the aorta.

"Dr Sibson, in his 'Medical Anatomy,' records 703 cases of aortic aneurism, of which 420 involved some portion of the ascending aorta; and he concludes that these tumours most frequently arise from the part of the vessel against which the greatest force of the blood is directed. Now, if this view be correct, and if it is true that the circulation of the soldier is more subject to mechanical obstruction than that of the civilian, then the site of the disease in the soldier should especially corroborate the result of Dr Sibson's investigations; and that it does so the following statistics prove:—Of 109 cases of aneurism of the aorta, there were, of the ascending aorta, 37;

arch, 38; descending aorta, 12; thoracic aorta, 7; abdominal aorta, 15.

"These cases have been abstracted from the post-mortem and museum records of Netley Hospital, care having been taken to exclude some which were not of soldiers, and from the post-mortem records of my own regiment since 1861."

From these cases we see that our inference was correct, and that a large majority of them were due to the lesions of the first two portions of the aorta. This special prevalence of aneurism in these two portions of the aorta had been noticed more than once, as Mr Myers states—first by Dr Hunter, 2d Queen's, on the Cause of Heart and Aortic Disease in the Army, which he published in 1836 in the first volume of the "Transactions of the Medical and Physical Society of Bombay;" then, again, in 1867, Staff-Surgeon Hyde published the report of a case of aortic aneurism (*vide* "Army Medical Report, 1867"), to which he appended the following remarks:—"The absence of atheroma in the coats deserves notice. It will probably be evolved, as these cases are more observed, that numerous instances of aortic aneurism in the army are unconnected with any special pre-existing structural degeneration of the arterial system; that they frequently commence under strains, as sacculated projecting pouches of the entire vascular coating." This case is of great importance, because it is held at the present day by many pathologists that there is no case of aneurism of the aorta without disease of the arterial coats in the first instance—*i.e.*, excepting a dissecting aneurism—and perhaps this opinion might hold good were the arch under all circumstances to retain its original curve; but when, as we have shown, it is frequently exposed—especially in the army—to influences which tend gradually to render the angle of the curve more acute, we are not so surprised at the absence of atheroma, as we have sufficient to account for their formation without falling back upon it; so that, placing atheroma and hypertrophy out of the question, as not being of themselves sufficient to account for the production of the lesion, the only other possible agent in its formation is some obstruction to the flow of blood at that point of the aorta—an obstruction the nature of which we have already described. There is another fact which throws some doubt upon the idea that atheroma is almost the sole cause of aneurism of the aorta, that, in the army, cases of aneurism are met with at a much earlier age than in the civil population, and in some at an age when atheroma is very rarely found; and certainly there is no reason why atheroma should occur at an earlier period in the soldier than in the civilian. Hence, all the results of Mr Myers's investigations tend to confirm the soundness of our theory, first, as regards the nature of the lesions which it entails, and secondly, as regards their comparative frequency.

We have already stated that these serious lesions are induced by the long-continued exertions made during drill by carrying the rifle and going through the musketry exercise, the body being, for the most part of the time, in the erect position.

How do we propose to remedy this? It is very simply done—by diminishing the amount of rifle exercise; and this could easily be managed without interfering with the efficiency and regularity of the movements which are the pride of the drill-sergeants and officers. The rifle-drill, *per se*, is not difficult to master; and when once thoroughly mastered, is not easily forgotten. We would propose that company and battalion drill should be done for the most part without the rifle; and although it might not look so military or imposing, when we put on the one side appearance and on the other the danger of heart disease, no one will, I hope, fail to see the necessity of yielding to the latter.

All these drills could thus be done, with an occasional exception, as that of an inspection or field-day; and we would venture to say that, on these days of extra exertion, the men would go through them better, and with less fatigue or risk of after injury to their circulatory organs, than according to the present system. When we consider how small our army is compared with other armies, we have the more reason to keep them in as sound and active a condition as possible. It would also prevent a great loss of men from invaliding, and thus would be more economical both of men and money.

Considering these many advantages that would be gained by adopting this method, we think it is an innovation which would more than amply repay its introduction, by rendering the men a stronger body, more able to undergo any prolonged exertion, and giving to the officers a better body of men to command.

ARTICLE V. — *Case of Hæmatemesis treated by the Hypodermic Injection of Ergotine.* By CHARLES STEWART, M.B. Edin., etc., Denny.

J. M., aged 28, housemaid in a gentleman's family, was seized at 4.30 A.M. of 15th October 1871 with vomiting of blood. I saw her at 5 A.M., and found she had vomited rather more than a pint and a half of blood, quite pure, semi-coagulated, of dark colour, and closely resembling a quantity of black currant jelly.

The patient was a stout woman, and, when well, of a florid complexion and general healthy appearance. When I arrived, I found her in bed, very pale, with a thready pulse of 108, much alarmed, of course, and complaining of great faintness and a feeling of sickness. Beside the bed was the wash-hand basin containing the blood. She felt no pain anywhere, but the stomach was a little tender on pressure, though no epigastric tumour of any sort could be detected. The lungs were healthy, and there was not, nor ever had been, the slightest tendency to cough. The heart and the dimensions of the liver and spleen were carefully examined, but nothing unnatural was found. The urine was non-coagulable. The catamenia were regular, and the last monthly discharge had occurred in its usual time and quantity two days previously. On questioning her closely, I ascertained that five years ago she had suffered from a similar attack in Edinburgh, when her life was considered in great danger. Previous to that attack she had suffered from symptoms which were called "indigestion." For a few months past she has experienced pain in the stomach, shooting through to the middle of the back, relieved for a time on taking food, but returning shortly afterwards, often so severely as to occasion sickness, and sometimes vomiting. Like most domestic servants, she has been in the habit of using strong tea largely as an article of all her meals.

From the antecedent history of this patient, and from the dyspeptic symptoms that had of late been troubling her, combined with the fact of the absence of any other apparent cause, I was led to believe that the hæmorrhage was due to gastric ulceration. From the great pallor of the surface, coldness of the hands and feet, thready pulse, and continued faintness, I inferred that hæmorrhage was still going on into the stomach; and from the profuseness of the bleeding already demonstrated, I was disposed to take a very gloomy view of the case.

I directed that she should be kept cool, abstain from every sort of food, and take fifteen drops of oil of turpentine in cold water every hour, and suck ice continually.

At 10.30 A.M. I was again called. She had thrown just one mouthful of very black blood since my early visit; but the bowels had acted once, and a large quantity of a tarry-looking fluid had been passed. She felt very sick and faint, and the pulse was *still* small and rapid. She was taking the ice and turpentine. I ordered her to have a dessertspoonful of brandy in iced water occasionally.

9.30 P.M.—Was called to her again. Found that she had vomited more than a pint of very pure blood, and was in a condition bordering on syncope. I administered a stimulant, put some pounded ice in a bladder and applied it to the epigastrium, and then injected about grs. iii. of ergotine in solution in water with a small proportion of spirit, beneath the skin covering the deltoid muscle of the left arm. The operation caused but trifling pain. It produced a dark-coloured stain shining through the skin around the puncture of the syringe. I fastened a small linen pad over the spot.

16*th October*, 11 A.M.—No bleeding has occurred since the injection. During the night the bowels were moved, the stool being dark-coloured as before. After a dose of turpentine, she hed, and threw up about a spoonful of matter like coffee-grounds.

Since then she has felt better. The skin is hot and dry; the pulse 120, and wiry; the head aches, the tongue is slightly furred. She passed a restless night, and is now suffering from a reactionary pyrexia. The puncture of the skin on the left arm is quite distinct, but the dark coloration around is quite gone, and neither pain nor any inflammation are present in the part.

Ice and brandy to be continued, but turpentine stopped. To have the ice-poultice occasionally applied to the stomach, and to be fed with small quantities of calves-foot jelly and cold arrow-root.

17th.—At 10 A.M. she was sick, and threw up about an ounce of transparent water tinged with blood. Pulse, 104, increased in power. Though there is no inclination for food, she feels as though she would relish "something salt." To have small quantities of good beef-tea, well strained and cold.

18th.—Pulse, 88; feels stronger. To have a drachm of castor-oil every four hours till the bowels are gently acted on.

From this date forward she continued steadily to recover, under a very carefully-regulated diet.

Lately, the dyspeptic symptoms having again shown themselves, she was put on ¼ gr. of nitrate of silver three times a day for a week, and has since been taking a mixture of calumba and gentian. She is still weak.

I think this case demonstrates very forcibly the great power of the hypodermic use of ergotine in arresting vascular hæmorrhage. Here, the most powerful remedies we possess for hæmatemesis (and I do not speak without a little experience) were employed in vain, viz., ice and turpentine. Dr Begbie did not give the ol. terebinthinæ more praise than it deserves, in his very able paper; but it failed here, even when combined with its still more potent ally, ice. But as soon as the ergotine was introduced directly into the circulation, the hæmorrhage at once, and I think I may say entirely, ceased. I have seen its power in epistaxis, but as yet have never had to employ it in hæmoptysis. A profuse case of the latter, which lately occurred in my practice, threatened to require the operation, but was checked, after much loss of blood, by ice, and a mixture of sulphuric acid and tincture of arnica.

[*Note.*—With so efficacious a remedy always at hand or readily procurable, why wait in any suitable case the uncertain action of slow and doubtful remedies?—ED. *E. M. J.*]

ARTICLE VI.—*Chlorine Water in the Treatment of Diphtheria.* By W. G. BALFOUR, L.R.C.S.E., Assistant Medical Officer to the Montrose Royal Asylum.

CHLORINE water is used by many practitioners in the treatment of scarlet fever. In the *Medical Times and Gazette* of the 25th August

1829, there is a letter by Messrs Taynton and Wells, stating that they employed chlorine water in cases of scarlet fever, and they "most solemnly declare that it proved successful in almost every case to which they were called in time, and in which the medicine was *faithfully* administered." At page 209 of Watson's *Practice of Physic*, vol. ii. (fourth edition), mention is made of this letter in the *Medical Times and Gazette;* and the good effect of chlorine water is there stated to depend upon its disinfecting properties, probably depriving the secretions from the throat in scarlet fever of their noxious qualities.[1]

Dr Matthew Gairdner of Crieff was, as far as I know, the first to use chlorine water in diphtheria, with the best results; and it was while acting as his assistant that I became aware of its good effects.

The following observations are made with the hope that an extended trial of the chlorine solution in diphtheria may establish its value in that disease:—

In a family in the neighbourhood of Crieff, four of the children suffered from well-marked diphtheritic sore throat. In all of them the tonsils and pharynx presented patches of diphtheritic membrane, the submaxillary glands were enlarged, and the urine in two of the cases contained albumen. They were all treated with chlorine water, stimulants, and milk. Three of the children recovered, the fourth died. Dr Omond saw the child that died along with me, and confirmed my opinion as to the nature of the disease. I attributed this death to the fact that the mother failed to *faithfully* administer the medicine, assigning afterwards as her reason that it made "the poor thing cry."

The conclusion that the want of the medicine was the cause of the child's death may have been wrong; but seeing those who took it all recovered, and that their symptoms at the beginning were fully as severe as those of the child that died, it is probable.

The following severe case of diphtheria, met with recently, appears strongly to confirm the good effects I formerly obtained in the treatment of this disease by chlorine in solution:—

B. W., a child three years of age, complained one morning of a sore throat, and on examination there was seen a deposit of false membrane, the size of a threepenny-piece, on the right tonsil. Diphtheria prevailed in the neighbourhood, and although there was no proof of contagion, I had strong suspicions that it was a case of diphtheria. A solution of potas. chlor. in water was given. Next day there was a further deposit of false membrane and marked constitutional symptoms.

The breathing was short, gasping, and difficult; the pulse 130 per minute, and the urine albuminous: a teaspoonful vin. ipecac. afforded temporary relief to the breathing; but in three hours after the administration of the emetic, the symptoms again becoming urgent, recourse was had to the chlorine solution in ʒii. doses every two hours.

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[1] To prepare chlorine water, put grs. viii. of potas. chlor. in a strong pint bottle, add ʒi. of acid hydrochlor. fort.; close the mouth of the bottle whilst the violent action lasts, then add water, ounce by ounce, with constant agitation, till the bottle is full. (An adult may use the whole pint in a day.)

Next day the symptoms were if anything more intense than before, the urine highly albuminous; all solid food was refused; milk and wine in small quantities and the chlorine solution were, however, still taken.

By the evening the child was breathing in gasps, and evidently fast sinking. Hot fomentations were applied to the throat and chest, more with the object of doing something than from any hope of good resulting. Shortly after the application to the throat the child had a paroxysm of coughing, followed by a profuse expectoration of something, which was swallowed (probably the false membrane, as there was immediate relief to the breathing).

The child steadily improved after this, the chlorine being continued for several days.

A week after convalescence was established, the child choked whilst drinking some water, part of the fluid being ejected through the nostrils. This choking occurred at times for several weeks after convalescence was established, and there was also aphonia.

Other cases of diphtheria, treated in exactly the same way whilst under Dr Gairdner of Crieff, might be published. The one I have given is in itself so typical, and its termination so satisfactory, that any addition would be superfluous for the purpose in view, viz., that of calling the attention of the profession to the value of chlorine in diphtheria.

The remedial action of chlorine in diphtheria and scarlet fever appears to be more general than local. It cannot exert much influence on the exudations, which are too often in the larynx and trachea, and consequently beyond its reach when the medicine is taken in solution.

Chlorine in solution, when taken internally, is absorbed as chlorine into the blood; in poisonous doses producing decomposition of the blood-corpuscles and hypochlorite of soda. If, then, diphtheria be a disease due to toxemia, it seems highly probable that chlorine being absorbed into the blood, even in small quantities, can hardly fail to affect the poison present in the system in some way.

The case given seems strongly to support this view, for it will be observed that before the chlorine was administered, the constitutional and local symptoms were so severe as to lead to a prognosis the reverse of favourable.

There was evidently a large deposit of false membrane in the trachea and larynx, and until this was got rid of by a fit of coughing, death from suffocation was imminent.

There was no fresh deposit of membrane after the coughing, but whether due to the chlorine or not others must judge.

Whatever be the theory of the action of chlorine in cases of diphtheria, I have not found it fail in the treatment of this disease, when faithfully given, since Dr Gairdner called my attention to it, and I trust others may be induced to try it with equally favourable results.

ARTICLE VII.—*On Feigned Diseases, their Detection and Management.* By GEORGE WILSON, M.A., M.B., C.M.; Medical Officer H.M. Convict Prison, Portsmouth; late Medical Officer H.M. Female Prison, Woking; and Assistant-Surgeon H.M. Invalid Prison, Woking.

(*Continued from page* 403.)

IN discussing further the different varieties of feigned diseases, it will be convenient to classify them as follows:—

I. Feigned and factitious diseases of the circulatory system.
II. " " respiratory "
III. " " digestive "
IV. " " urinary "
V. " " generative "
VI. " " locomotive "
VII. " " integumentary "

I. Feigned disorders of the circulatory system are comparatively rare. I have met with a few cases, in which convicts, preparatory to the hospital visit, if treated in separate cells, have accelerated the pulse and produced profuse perspiration by covering their heads over with the bed-clothes and breathing rapidly for some time. If the tongue has been previously coated with whiting from the walls—a practice not at all uncommon—such cases may be mistaken for febricula; but their real nature is easily ascertained by visiting them at an unusual hour.

Palpitation and irregularity of the heart's action have sometimes been induced by taking doses of the veratrum album or white hellebore; and, according to Gavin, so widespread was this practice at one period amongst the Royal Marines, that many were invalided before it was detected. The dose was about ten or twelve grains, and was repeated until symptoms of a somewhat grave nature set in—such as incessant vomiting, frequent tremors, clammy sweats, weak and irregular pulse, followed by violent and interrupted action of the heart. In like manner, the heart's action has been intentionally lowered and seriously disturbed by over-dosing with digitalis, tartar emetic, tobacco, etc.

While a state of syncope is often feigned by hysterical females, mendicants, and others, it is next to impossible to simulate its characteristic symptoms, and hence detection is easy. Indeed, in almost all cases of induced or simulated disorders of the circulatory system, a careful examination with the stethoscope, after the patient has been allowed to remain quiet for some time, will make clear their character; and when drugging is suspected, it is requisite that the patient be kept so far secluded as to prevent him from obtaining any further supply.

II. The symptoms of diseases of the respiratory system most commonly feigned are, pain in the chest, cough, hæmoptysis, dyspnœa, and aphonia. With regard to the first of these, it is important to bear in mind that it often exists independently of any lung affection, and may be of considerable severity. For example, it may be purely muscular—as in the case of persons who are accustomed to work at low benches or desks; or it may be sympathetic, as in some forms of dyspepsia. In the former case, it is generally well localized; and in the latter, though of a dull, undefined character, it constitutes one of a group of other symptoms, which need leave no doubt as to its genuineness. When it is feigned, on the other hand, it is usually represented to be "all over the front of the chest," and the malingerer will either be unable to describe its character, or will readily acknowledge that it corresponds to any incongruous description that may be suggested to him. If the pain be described as sharp and "catching" on a deep inspiration, and confined to a particular spot—if, too, the manner of the patient accords with his statement—it always ought to be treated as genuine, even though no stethoscopic signs of commencing pleurisy or other lung disease be detected. In subacute attacks of pleurisy, there is no doubt that special auscultatory phenomena are often absent, while the pain may be so severe as to interrupt the respiratory rhythm.

As a rule, feigned pain in the chest is accompanied by feigned cough. This latter, when listened to, gives one the idea of studied effort, and is of a dry, barking, blowing character. As might be expected, it never disturbs the patient's rest—and, indeed, is only troublesome to him when he can make it troublesome to others—it being found that he has no fit of coughing so long as he believes he is not heard. Any expectoration that may be kept for inspection consists chiefly of saliva mixed with a little clean mucus; though I have seen a few instances in which expectorated matter has been freely purloined from the spittoon of a patient in the same ward suffering from phthisis or chronic bronchitis, and represented as the schemer's own. Sometimes, however, the cough is associated with hæmoptysis; and, when this is the case, the contents of the pot or spittoon are of a dark, thin, treacly appearance, and of a somewhat ropy consistence, owing to the admixture of mucus and saliva with the blood. There is an absence of air-vesicles and of the floridness to be observed in acute attacks of hæmoptysis; there is no tendency to coagulation, nor are there any of the spots or streaks of blood in the sputa, so characteristic of genuine slight attacks. The blood in these cases is generally obtained by sucking the gums or biting the tongue, and if the patient is expectorating it when visited, the bleeding part can usually be seen. But more frequently the patient complains that he has a bad cough, and *has been* spitting up blood, in which case it is only necessary to examine the mouth, and afterwards ask him to cough and expectorate, to establish the suspicious character of his complaint. A careful examination with the stethoscope will confirm the diagnosis. If the blood shown in the spittoon be of considerable quantity and coagulated, the probability is that it has been derived from one or both nostrils, when traces of blood will be found on the mucous membrane of the nose, and very often on the tip of the forefinger of the right hand, the nail of which has been used to produce the bleeding. Cases have been recorded of hæmoptysis having been feigned by inserting foreign substances into the mouth, such as carmine, brick-dust, vermilion, etc., but none such have come under my notice.

When dyspnœa is feigned, the malingerer calls it an attack of asthma; and I have seen several instances in which the attitude of an asthmatic patient and his laboured breathing have been very well imitated. It is effected by a voluntary constriction or temporary closure of the glottis. The breathing has a wheezing, stridulous sound (somewhat resembling that of laryngismus stridulus), which is also heard more or less distinctly along with the respiratory murmur when the ear is applied to the chest. In real asthma, on the other hand, there is an absence, or marked diminution, of breath-sound on auscultation; while the evident distress pictured on the countenance of the patient cannot well be simulated.

Aphonia is very rarely feigned in prison, because nothing is to be gained by it. A suspected case could be detected by putting the patient partially under the influence of chloroform, and a speedy cure effected by mopping out the larynx with a solution of nitrate of silver, or by having recourse to the galvanic battery. I have only seen two cases amongst convicts; but I did not consider any interference necessary, on the grounds that the quieter a prisoner is, so much the better for himself and all who have got anything to do with him. When aphonia occurs amongst females, it is often of a hysterical nature, but yields readily to galvanic or electric treatment.

In discriminating between real and feigned chest symptoms, it is always advisable to satisfy oneself by auscultation and percussion concerning the state of the lungs, otherwise mistakes might occasionally be made. When feigned hæmoptysis is suspected, the patient should be made to expectorate first, to find out whether the blood proceeds from the mouth, and afterwards to cough and expectorate. Doubtful cases should be treated as genuine, or put under observation; but when the case is clear, the malingerer may either be told so, and dismissed as a humbug, or some distasteful, yet legitimate, course of treatment may be pursued. For example, if pain and cough are feigned, a warm turpentine stupe and an emetic will in all likelihood produce a rapid cure, while low diet is found to be very efficacious in checking hæmoptysis. When children make too much of a cough or cold, as they often do, a mustard poultice is a suitable remedy.

III. Disorders of the digestive system may be either feigned or induced. Vomiting, diarrhœa, dyspepsia, stomachic pain, distention of the abdomen, prolapsus ani, hæmorrhoids or bleeding from the rectum, have all been more or less successfully feigned or purposely excited; and it must be owned, that some cases of this class are attended with more than ordinary difficulty in the way of detection and management. With regard to vomiting, this difficulty becomes at times very considerable; for while, on the one hand, it is easily simulated, and, by a little practice, can be excited without effort, on the other hand, it may be the only prominent symptom of a disordered state of health, and may resist treatment for some time. It is generally admitted, for example, that it does not always depend upon gastric irritation—that, in fact, it is often associated with a depressed state of the system or nervous irritability, and may be unaccompanied by other signs of derangement affecting the pulse, tongue, the appearance of the patient, or the matter vomited. Moreover, if the persistency sometimes evinced in this variety of malingering is apt to allay suspicions, the protracted nature of genuine cases resisting for weeks and weeks every species of treatment is, in like manner, calculated to arouse them. I have seen a few instances of such extreme emaciation brought about by constantly vomiting the greater portion of the food, that one might readily have inferred that the malingerers were suffering from serious disease. I have also had one case under my care which, for some time, I could not help regarding with suspicion, but which afterwards turned out to be one of thickening and stricture of the pylorus, a form of disease occasionally met with amongst hard drinkers.

Vomiting is sometimes excited by tickling the fauces; but amongst convicts this practice can only be had recourse to on rare occasions, because it is sure to be detected. It is usually effected by pressure on the gastric region, or by voluntary contraction of the recti muscles, and is sometimes aided by swallowing air, thereby producing over-distention of the stomach. In the army it has been induced by emetics, by swallowing tobacco-juice, urine, and bullocks' blood (so as to feign hæmatemesis); and rare cases have been recorded of its having been associated with the swallowing of excrement and other abominations. When no foreign substances have been taken, the vomited matter, if ejected shortly after a meal, as is generally the case, consists of the food in an undigested state. It is free from the ropy mucus so often seen in chronic diseases of the stomach, and it is unmixed with blood, giving it the grumous or coffee-ground appearance of the *ejecta* in cases of ulcer or malignant disease. It will also be found that the patient is always very careful to have something in his pot ready for inspection at the hospital visit, and that he seldom or never admits of any improvement or amelioration of his symptoms. Speaking from my own experience, I would say that microscopic examination fails to detect any *sarcinæ ventriculi* in the vomited matter; but this is of minor importance, and need not be insisted on. There is another point, however, of some diagnostic value, and it is this: that if stimulants be given in the intervals between meals by way of experiment, the patient not only retains them on his stomach, although he rejects liquid food of every other description, but states that they do him far more good than anything else. Furthermore, the vomiting is more apt to occur after the meal preceding the visit than at other times.

The treatment which I have found to be most successful in recent cases, and when the patient is in tolerably fair condition, is at once to put him on low diet; assuring him at the same time that so soon as the vomiting ceases he will get more food, but if it continues, that it will be lessened, and that he must be fed *per rectum*. When the patient is received in an emaciated condition, care should be taken that liquid food, such as milk and beef-tea, should be given in small quantities and at short inervals, and that the patient should constantly keep the recumbent position. This latter is an important point, because I feel convinced, from cases which have come under my own observation, that voluntary vomiting cannot be readily accomplished unless the patient can suddenly bend and jerk the upper part of the body over the edge of the bed at the moment when the diaphragm is depressed, and the recti muscles contracted, to aid in the act. In persistent cases nutrient enemata should be administered with the œsophageal tube, and the tube retained in the rectum for some considerable time after its introduction, to prevent the return of the enema. It will be seen from these remarks that the course of treatment recommended differs but little from what would be pursued in obstinate vomiting arising from actual disease, such as ulcer of the stomach; and, on this account, it cannot be stigmatized as harsh or unjustifiable, even when employed in doubtful cases.

Concerning diarrhœa of a feigned or factitious nature, brief notice will suffice, although such cases are of almost daily occurrence in prison practice. It is so easy for a prisoner to say that he is suffering from this complaint, and so difficult to tell whether he is or not, without putting him under observation, that I have no doubt many receive treatment amongst the casual sick who are really scheming. This, however, is a matter of small moment, and cannot well be prevented. It is only when the prisoner throws up work on account of his suffering from diarrhœa, or when he keeps complaining for two or three consecutive occasions, that steps should be taken to test the validity of his statements. Of course, if he looks ill, his case is treated as a *bona fide* one, and he need not be sub[illegible] to such close scrutiny. But if he presents no other symptoms of deranged health beyond the diarrhœa which, as he alleges, incapacitates him for work, or of which he is constantly complaining, he should at once be put under strict observation, which consists in his being obliged to use a close-stool, in the presence of a warder, when he requires it, and not allowed to go to the water-closet. This close observation is necessary, because a malingerer will have no hesitation in breaking up his fæces and mixing them with his urine so as to imitate a liquid stool, if he be not watched; indeed, several such cases have come under my own personal knowledge. Should it now turn out that there is no diarrhœa, the prisoner is reported, and gets punished; if, however, it be found that he is suffering from diarrhœa, the question arises as to whether it has been induced, or whether it be of such severity as to necessitate his admission into hospital. The former suspicion often crosses the mind of the prison surgeon, because he is well aware that pills made of ordinary soap are at times freely partaken of to excite diarrhœa; but as it is impossible, even in suspicious cases, to assure oneself that such pills have been swallowed, it is advisable to treat the complaint as genuine, if it be of any severity—that is, by spoon or liquid diet, given cold, and in small quantities at a time. If the diarrhœa be factitious it soon ceases, because the malingerer speedily tires of this diet; and, on the other hand, if it be real, such diet is best suited to promote the patient's recovery. In like manner, an emetic is found to be very efficacious and suitable in some cases, inasmuch as it constitutes a valuable remedy in the treatment of the real disease. For ordinary cases, whether they be genuine or not, occurring amongst the casual sick, I have found the following plan of treatment work very satisfactorily:—If the tongue be coated, I order a dose of a mixture consisting of ol. ricini, vin. op., mucilag., and aq. menth. pip.; when it is clean, and no pain complained of, a dose of an acid astringent mixture is given; while if pain be complained of, though the tongue be clean, a dose of carminative mixture containing chalk is administered. In order to be able to prescribe with advantage, and to prevent scheming in hospital, the stools of diarrhœa patients should always be kept for inspection.

Feigned dyspepsia, and feigned stomachic pain, may be considered conjointly, because the latter is generally the only symptom, subjective or objective, upon which the malingerer grounds his complaint as to his suffering from the former. And here the exercise of careful discrimination is specially necessary, inasmuch as dyspeptic disorders constitute the great bulk of minor ailments to be met with in general practice, and, moreover, in many cases beyond the range of suspicion, we have to rely almost exclusively on the sensations of the patient. In differentiating, therefore, between cases, we can only approach to a sound conclusion by what is called a process of exclusion. If we find the tongue clean, the pulse normal, the bowels regular, and the general appearance of the patient healthy, there is strong presumptive evidence that the dyspepsia and pain complained of are feigned, or, at all events, exaggerated, and the patient may either be informed that his ailment is of too trifling a nature to require treatment, or he may be treated with a black draught, which will do no harm if it does not do much good. There is another mixture found to be very serviceable in cases of questionable or exaggerated illness of a dyspeptic nature, which goes by the appropriate name of "choke-em-off" amongst prisoners, and, by way of variation, is dubbed in therapeutical phraseology, *mistura amara*, or *haustus spasmodicus*. It is compounded of sp. am. fœtid., assafœt., tinct. valerian, and infus. chirettæ; and, to judge by the facial expression of the patient after swallowing a dose, it maintains the high reputation which drugs in general possess as regards their nauseous properties. In persistent cases of simulated dyspepsia, an emetic is found to be very advantageous. Sometimes, as a proof of the genuineness of the dyspepsia complained of, the patient maintains that his bowels have not been moved for days or even weeks, and that the aperient medicine prescribed for him on repeated occasions has had no effect, although he has gone to the water-closet and strained to his utmost. In the absence of any signs of fæcal accumulation in the abdomen, it is advisable to put such cases under observation, when, as a rule, it will be found that the bowels are moved within twenty-four hours without the aid of medicine, thereby clearly establishing their feigned nature.

I need not say that when the pain complained of is severe, a physical examination of the patient is necessary in addition to inquiries concerning the character of the pain, its seat, its relation to time, whether constant, periodical, or occasional, whether after or before meals, etc. When colic is feigned, the malingerer generally betrays himself by complaining loudly on palpation or pressure. The treatment which I pursue in such cases is to administer an emetic, or order turpentine stupes to be kept applied until the patient admits that the pain is removed.

In connexion with this part of the subject, I may briefly allude to that species of feigning which simulates loss of appetite, or partial or total abstinence from food for a time. A prisoner will readily enough maintain that he does not take his food, when all the while he is taking the whole of it; but there are two checks which prevent his gaining anything by this mode of scheming,—for, in the first place, the rules of the prison not only forbid him to give away his food to a fellow-prisoner, but enjoin him to return any food which he cannot take to his warder; and, in the second place, every warder has instructions to bring to the notice of the medical officer any prisoner who is in the habit of returning portions of his food. The cases, therefore, which present any degree of difficulty in the way of management are those in which food is habitually and intentionally returned, the patient giving loss of appetite as a reason. Such cases should be admitted into hospital for observation, and the ordinary full hospital diet allowed at first; it will then be found that while part of the bread and potatoes are returned, the meat and soup are taken. The patient is also very careful to state the quantity returned, and will rather overstate than understate it. If there are no symptoms to indicate why his appetite should be deranged, he is next put on low diet and ordered a *placebo* mixture—a plan of treatment which is usually attended with the happiest results, for in a day or two he will gently insinuate that he thinks he could take a little more food, as the medicine has decidedly done him good. Obviously it would be bad policy to grant his request, because, if granted, his *ailment* would in all likelihood become chronic; he is, therefore, gravely informed that, in order to prevent a *relapse*, it is necessary he should be kept on this diet for a few days longer, and that he should continue the medicine. So soon as his request for increased diet becomes importunate, he is told that since he has regained his appetite, he is now quite well, and is accordingly discharged from hospital *cured*. This feigned loss of appetite is likewise often resorted to by patients who have been admitted into hospital for some genuine ailment, and who are very anxious to prolong their stay, as the majority of prison patients undoubtedly are. To those who are constantly saying that although they take their food they have to *force* it down, little attention need be paid.

In complete abstinence from food, or refusal to take it, recourse should be had to the stomach-pump. I have seen several very obstinate cases of the kind in prison, generally associated with feigned insanity; but a little rough feeding with the stomach-pump has always resulted, after a longer or shorter interval, in the prisoner's taking his food without compulsion. If the introduction of the œsophageal tube be resisted, as it commonly is, I use the screw gag, inserting it between the upper and lower molars of one side; and should the food be voluntarily ejected afterwards, both gag and tube are retained *in situ* for some time.

Cases of this description, occurring in general practice, and amongst hysterical females, are usually feigned, the patient obtaining food surreptitiously. Even in such cases, although the treatment might appear harsh, my own opinion is, that the stomach-pump should be used when more lenient measures fail; at all events it may safely be said, that had some such active steps been taken in the case of the Welsh fasting girl, or even had she been left to herself, there is no doubt that her life would have been saved, and a public disgrace to the profession avoided.

The next point of any importance connected with feigned diseases of the digestive system which comes to be considered, is distention of the abdomen. This can be readily simulated by arching forward the lower dorsal and lumbar portion of the spinal column, by keeping the lungs well inflated, and thus depressing the diaphragm, while, at the same time, the shoulders are thrown well backwards. Under these conditions the girth of the waist is increased, and the surface of the abdomen becomes tense and protuberant. Although I have met with a few such cases among convicts, this mode of scheming is seldom resorted to, because it is easily detected on a first examination. The patient should be divested of his shirt, and laid on his back on a hard mattress, or, better still, on the floor. The overarched state of the spine will then become apparent, and if steady pressure be made with the hand on the abdomen, while the patient is directed to count as long as he can without taking an inspiration, the distention will gradually subside. Should he not comply with the instructions, and, instead of making a prolonged expiration, keep taking "short breaths," the nature of the case becomes clear, and no further trouble need be wasted on it. I have met with only one case of abdominal distention produced by other means, and from the markedly tympanitic sound emitted on percussion, I had every reason to believe that the distention, which was very considerable, had been brought about by swallowing air; at any rate, it soon disappeared under a course of tartar emetic and sulphate of magnesia.

Whether prolapsus ani can be artifically produced or not, I have little doubt, judging from cases which have come under my own observation, that when it does exist, a malingerer can, at any time, exaggerate it to such an extent as to unfit him for work. Not long ago, a prisoner, who had been admitted into the hospital for debility and loss of flesh, began to complain shortly after his admission that his "seat" came down, and that he was losing a great deal of blood every time he went to stool. On examination, a large portion of the rectum was found to be protuding, and there was some blood in the night-stool; there were also traces of blood about the points of his fingers, which the patient accounted for by saying, that he had been trying to force back the "gut." As I had once seen a somewhat similar case before, in which the prisoner had been detected using a small pointed piece of wood to wound the rectum, and so produce bleeding, I strongly suspected that in this case the finger-nails had been employed for the same purpose, and my suspicions were strengthened, because the same condition of things was repeated at each visit. I used a strong solution of nitrate of silver, made the patient keep the recumbent position, and gave him a rectum plug to wear; but, day after day, he complained that he was no better. It so happened, however, that there were some patients in the hospital at the same time who were about to be removed to an invalid prison, and I have no doubt he was aware of this, and hoped that by persevering long enough he might be sent along with them. Whether this was the case or not, he expressed himself as being much better the day after their removal (there no blood in the stool and no prolapsus), and he wished to be allowed to get up and go to work again. He was discharged from hospital shortly afterwards, and although he has been employed at the ordinary hard labour of the prison ever since, he has not presented himself a second time as a complainant. A few other cases of the same kind have come under my notice, but the daily application of a caustic solution with a probang pushed well up the rectum, along with the recumbent position and confinement in a separate infirmary cell, has always succeeded in ameliorating the prolapsus to such an extent that the patients have soon become fit to resume work and have given no further trouble.

When bleeding from the rectum is complained of, the patient's linen and drawers should be examined, because in genuine cases blood-stains can almost always be detected, and the absence of them, therefore, makes the case look very suspicious. But sometimes a malingerer will show a quantity of blood which he asserts has been passed in this way, when it is found that it has been derived from the nostrils. The following is an instance of this form of scheming:—One morning I was roused out of bed to visit a prisoner, whose cell-floor was said to be covered with blood. I found him groaning in bed, and there was certainly a considerable quantity of blood on the cell-floor, in his pot, and on the sheets of the bed. He said that he had passed the blood from his bowels, and that he was in great pain; but as he was an old malingerer, I was very doubtful, about the truth of his statements. Accordingly, I pushed my finger up his rectum, and, on withdrawing it, could discover no signs of bleeding from that quarter; but on examining his nostrils I found abundant evidence as to how the bleeding had been produced.

Internal hæmorrhoids are often pleaded as a disqualification for being put to the more severe kinds of prison labour. As they sometimes do not exist at all, and, when they do exist, are often made the most of, an examination with the anal speculum is essential to a correct diagnosis in each particular case.

IV. Feigned and factitious diseases of the urinary system chiefly affect the following pathological conditions, viz., incontinence, retention, diabetes insipidus, and hæmaturia. When a prisoner complains that his urine is constantly dribbling away from him, it is a matter of importance that he should be examined at once, because it very often happens that he has not reckoned upon such examination, and his linen, therefore, will be found dry. But sometimes, having prepared for this contingency, he presents himself with his linen properly soaked, and it then becomes a question whether or not this is owing to incontinence. If he be malingering, there will be an absence of the disagreeable urinous odour which is always more or less perceptible in the real affection, and the penis and neighbouring parts will not present the characteristic moist and chafed appearance. To clear up any doubts, the mattress on which he has slept should be examined. Persistent cases should be admitted into hospital for observation, and a catheter passed at an hour when a visit is least expected. If a considerable quantity of urine be drawn off, and if it issue in a tolerably strong jet, there need be little doubt as to the feigned nature of the case, because when incontinence is due to a paralyzed condition of the bladder and consequent over-distention, the urine, unless in recent cases arising from accident, is ammoniacal, and, moreover, it is always associated with some serious form of disease, as paraplegia, apoplexy, fever, etc. As another diagnostic test, a good dose of opium might be administered at bed-time, and the sheets examined towards morning before the patient awakes. In all feigned cases, and when the bed is "wetted" every night, I know of no more efficacious treatment than to have the patient aroused every hour or so, and made to get up and urinate. With the exception of some rather aged prisoners, and of a few cases of serious disease, I cannot call to mind any *genuine* case of incontinence occurring amongst prisoners, and I therefore feel warranted in saying that, amongst adults, the real disease is extremely rare.

Retention of urine (using the term as quite distinct from suppression) is invariably connected with an over-distended bladder, a condition which can readily be diagnosed by palpation and percussion, while, by passing a full-sized catheter, the existence or non-existence of stricture and the amount of urine can be established. The detection of feigned cases, therefore, is not difficult, and need not require any further remark beyond this, that they are more common amongst female than amongst male prisoners.

Of more frequent occurrence than either of the above modes of scheming is that of feigned diabetes insipidus. As this may be simulated by adding water to the urine, or by drinking large quantities of water and thereby increasing the flow, it is necessary that all such cases be put under strict observation. The quantity of liquid allowed should be clearly stated, and precautions taken that the patient obtain no more than this allowance. It is also advisable that all vessels be removed from the cell, and that the patient, when he wishes to pass water, should be able to intimate his desire to an attendant, in whose presence it should be voided and then removed. Both the quantity and specific gravity can thus be accurately ascertained, and, within twenty-four or forty-eight hours at the utmost, the nature of the case clearly established.

With regard to hæmaturia and other abnormal appearances of the urine, it is likewise requisite that the patient be made to urinate in one's presence, and, in the event of his refusing or asserting that he cannot do so, to pass a catheter. Malingerers will sometimes mix blood, milk, dirty water, etc., with their urine to alter its appearance; but by adopting the above measures, imposture becomes impossible. Indeed, on all occasions when an examination of the urine is intended, it is necessary, at least in prison practice, that it should be voided in the presence of some responsible person, and immediately removed, otherwise its appearance and analysis may become alike very puzzling. Cases have been recorded in which blood and other substances have been introduced into the bladder, but they are of such rare occurrence that the mere mention of them will suffice.

V. So far as my own experience goes, feigning in connexion with the generative system has been confined to females. The distention of the abdomen already described is sometimes simulated by female prisoners to imitate disease of the "womb;" and though the same means of diagnosis will generally succeed in detecting imposture, it is necessary to bear in mind that, in this class of patients, abdominal distention may actually exist independently of any enlargement of the uterus or other organic disease, as, for example, in cases of so-called spurious pregnancy and hysterical tympanitis. Cases of feigned prolapsus uteri, leucorrhœa, and menorrhagia have occasionally come under my notice, but a digital examination, along with the evidence of a female attendant as to whether or not the linen was stained, rendered detection easy. I may add that women who have had children, and in whom the uterus and its appendages are relaxed, can readily simulate partial prolapsus by "bearing down" when an examination is made, but the requisite straining cannot be attempted without becoming apparent.

VI. Feigned and factitious diseases of the locomotive system include such deformities and affections as curvature of the spine, wry neck, stiff joints and contracted limbs, elevated shoulder, lameness, anasarca, rheumatism, the effects of injuries, and mutilation. Although my opportunities have not been extensive enough to enable me to discuss all these different conditions from personal observation, I may briefly allude to some general principles applicable to most of them, which have been laid down by the best authorities as aids in diagnosis. For example, in a case of suspicious deformity, whether arising from spinal curvature, gibbosity or elevated shoulder, or from a stiff joint and contracted limb, it is recommended to inquire, first, as to how and when the deformity originated, and afterwards to have the patient stripped, either wholly or to the extent requisite for a full and complete physical examination. If the case be one of lateral curvature of the spine (the kind generally feigned), the extent of the curvature and general condition of the spine should be noted, as should also the marked elevation of the haunch on the concave side, the singleness and situation of the curvature (dorsolumbar), and the absence of gibbosity on the convex side—all these being points which are more or less diagnostic of this variety of scheming. As a test, the patient should be examined when lying on his belly, the loins fixed with a tight bandage, and the arms extended above the head, or he might be made to suspend himself by the hands from a beam or rope. Gibbosity could be detected in the same way. Stiff joints, on the other hand (several feigned cases of which I have myself seen), should be carefully compared with the corresponding healthy joints of the opposite limbs, it being found that, besides a connected history as to how the stiffness arose, there are always abnormalities more or less discernible in the size and conformation of a joint which has become stiff as a result of accident or disease. A feigned stiff knee-joint can be readily detected by fastening the patient in a sitting posture on a table, with the joint projecting over the edge. In this position the power of the extensor muscles of the thigh will soon become exhausted in keeping the leg straight, and consequently it drops. By suspending a weight, such as a bucket, from the ankle, and afterwards pouring a little water into it, the period of resistance will be considerably shortened; but in adopting this plan of treatment it is necessary that the patient be fastened to the table, else he will slip off, bucket and all, as once happened to myself, so soon as he finds the bucket becoming uncomfortably full. This plan of suspending weights to limbs, whether the arm or leg, has often succeeded in the hands of army surgeons in detecting imposture; but I think the same ends could be gained, and perhaps as satisfactorily in some cases, by fixing suitable splints capable of being extended by means of a screw. Opium or chloroform may also be employed to great advantage.

Amongst convicts, œdema or the swelling of a limb, rheumatism, the results of injuries and self-mutilation, are more liable to be feigned, exaggerated, or produced than the varieties of scheming noticed above. I have seen a few cases of feigned, stiff, and contracted fingers, but there was not much management required in curing them. Swelling of a limb is produced by ligature; indeed, so commonly is this practice resorted to in prison, that all swollen limbs should be examined for the traces of ligature. Injuries likewise are aggravated in the same way, and the cure protracted, as in a case of fracture of the lower third of the radius not long ago under treatment in this prison. It was observed one day, after firm union had taken place, and when only a bandage was necessary for support, that the hand was very much swollen. This at first sight was attributed to over-tightness of the bandage; but, on discovering that the swelling also extended above where the bandage was applied, a further examination was made, and a ligature was found tightly tied round the arm a little above the elbow-joint. Another form of factitious swelling is the puffiness of the dorsal surfaces of the hands or feet, or of the lower part of the forearm on the radial side, which is often produced by thumping for a time on one or other of these parts with the closed fist. The parts themselves, when presented for examination, are swollen, red, and slightly bruised-looking, but without abrasion of the cuticle, and, when once seen, the character of such swellings is readily recognised afterwards. The malingerer generally attributes them to a blow or sprain of some kind which he says he has received on the works. The plan I adopt in dealing with such cases is to tell the prisoner frankly how the swelling has been produced, and to dismiss him with the caution that if the same trick is tried again he will be reported.

Rheumatism, and more especially that particular form of it called lumbago, is also made a frequent pretext for avoiding labour; but here, as in cases of dyspepsia, it is not always easy to discriminate between the feigned and the genuine disease, inasmuch as chronic rheumatism may present no objective symptoms. Persistent cases, therefore, should always be admitted for observation; and if it be found that the patient sleeps soundly on sheets, a dose of the galvanic battery and a little low diet will in all likelihood produce a speedy cure. When lumbago is complained of, it is best to humour the patient at the outset by examining the pulse, tongue, loins, etc., then to ask him whether he has observed any puffiness about his ankles lately, and end by requesting him to pull down his stockings to show them. As a rule, he will be taken off his guard by the interest displayed in his case, and will bend his back with an amount of alacrity which one really suffering from lumbago would envy, and, in fact, dare not attempt. But sometimes a fellow with his wits about him is not so easily caught, and then the wisest and most effectual course is to treat the case as genuine, and administer hot turpentine stupes.

When a convict receives a sprain or fracture of any kind, he is very apt to make the most of it by protracting the cure; and should he receive a contused wound, he will sometimes render nugatory all other surgical aid by "doctoring" it himself. After amputation, he will even interfere with the stump, so as to induce necrosis, and thereby sometimes necessitate re-amputation a little higher up. After injuries of the former description, he should be discharged to light labour on trial, so soon as a reasonable time has elapsed to effect a cure and all swelling has disappeared. Should there be no subsequent duskiness of the part nor return of swelling, he may safely be kept at his work, no matter how earnest his protestations may be that he is unfit to leave the hospital. In cases of wounds or amputation, the dressings should be so applied that they cannot be interfered with without discovery.

Self-mutilation is another feature of malingering, not at all rare in hard-labour prisons. Some time ago, a convict divided both tendines Achillis at Portland to disqualify himself for work; and the medical officer of Chatham Prison writes, in his annual report for 1869, that "bruising of the hands between the buffers of railway carriages has been a very common mode of producing bad accidents, and thus gaining admission to the infirmary. Of the fracture, one death is recorded, which occurred from a prisoner purposely putting his foot under the wheels of a railway engine in motion; his leg was dragged under the wheel, and amputation was performed; but he died some days afterwards from tetanus." A few cases belonging to this category, but not in any way serious, have occurred at this prison during the present year.' All such cases are of course treated for the injury, and are justly punished when they are fit.

VII. Under the heading of the integumentary system, remain to be considered factitious abrasions, ulcers, and abscesses. At one period soldiers were much addicted to producing tolerably fair imitations of such skin diseases as tinea decalvans, urticaria, erysipelas, and impetigo, by the use of various irritants and blistering substances; but now that the study of these diseases has become so much more general, I imagine that this variety of scheming has become very rare. In prison, I have only seen one case of feigned skin disease, which was, however, limited to the forehead and both cheeks. The cuticle had evidently been rubbed off with a rough towel, and the bleeding, ichorous surface had been well soaped to keep up the irritation. Being satisfied as to the nature of the case, I had the parts carefully washed and dried, and afterwards brushed over with collodion, thereby preventing the patient from tampering without my knowledge. In three days the thin crusts had all cleared away, and the healthy skin appeared beneath. As I have already said, such abrasions as these are sometimes met with in cases of feigned epilepsy, and are produced in order to give the impression that the patient must have fallen during one of his "fits." But more frequently they are made on the shin, and attributed to an accident, the patient in this instance stating that he shows the abrasion thus early lest he should be suspected of tampering with it in the event of its *festering*—a result, by the way, which is not at all unlikely if he be not cautioned at the time; for, generally speaking, the convict who assumes this air of injured innocence is the very fellow who *does* tamper when he thinks he can do so with impunity. In the vast majority of cases of ulcer that occur in prison, I believe the ulceration is commenced in the first place by producing an abrasion, and afterwards keeping up the irritation by applying soap, lime, whiting, etc. This variety of malingering goes by the name of "faking," and is often resorted to in wounds of all descriptions to prevent them from healing. The factitious ulcer is almost invariably found on the leg, or, less frequently, on the forearm. Its edges are generally circular and well defined, without being callous; its surface healthy-looking when cleaned; while the surrounding skin is natural in appearance, except where ulceration has formerly existed. In short, its distinguishing characteristic is an entire absence of a *raison d'être*, so to speak; its existence being altogether inexplicable, except on the ground of artificial production. Sometimes with the aid of a magnifying glass minute particles of whiting, glass, etc., can be detected, but usually examination can only decide that both ulcer and dressings are dirtier than they ought to be. The most effectual plan of treatment is to dress the ulcer in such a way that it cannot be tampered with without discovery, and this mode of dressing should, as far as possible, be adopted with regard to all wounds. Various methods have been proposed, such as sealing the bandages after they have been applied, or painting lines on them, or by enclosing the limb in a wooden box, as first carried out by the late Mr Hutchison. All these have proved more or less serviceable in the detection or prevention of interference, but the plan which I have found to be most efficacious, in a curative as well as preventive sense, is an adaptation of the antiseptic system of treatment, varying it according to circumstances. The first desideratum is to have the wound or ulcer thoroughly cleaned, washed with a carbolic acid lotion, and dried; then, if it be small and superficial, a coating of styptic colloid or collodion will suffice; if it be larger, say about the size of a florin, the part of the limb affected is strapped, and a coating of styptic colloid applied over the strapping; if it be larger still, a layer of carbolized cotton-wool is applied directly over the ulcer; this is brushed over with styptic colloid, and, over all, a bandage is applied which is also coated with the colloid. In some cases gutta-percha tissue may be advantageously employed in addition. In this way the dressings cannot be disturbed by the patient without detection, and they should not be removed until a reasonable time has elapsed for healing to have taken place. If there should be any tendency to the oozing of pus through the dressing, as will happen in large ulcers, it should be washed with a strong solution of carbolic acid, and a fresh layer of cotton-wool and another bandage be applied over the first dressing. Without going further into detail, I would strongly advocate Professor Lister's plan of dressing in all wounds of whatever description, not only for its intrinsic merits, but because it is a safeguard against tampering in suspicious cases. In simple abrasions, or small ulcers of the leg which are undoubtedly artificial, a very successful plan of treatment is to insist on the limbs being kept exposed day and night outside the bed-clothes, in which case no dressing need be applied.

Factitious abscesses are likewise of common occurrence amongst convicts. They are produced by inserting a small pointed piece of wood or pin, covered with dirt, which is allowed to remain long enough to excite inflammation. The malingerer does not present himself until suppuration has set in, and the surrounding parts are highly inflamed. I have seen several cases of this description, and have found that the puncture is always discernible although it may have closed up. The pus, when the abscess is opened, has a dark sloughy appearance, and sometimes contains some fragments of foreign substance, which clearly establishes the character of the case. As an instance of this kind of malingering, I quote the following from the annual report for 1869 of the medical officer of Portland Prison:—"A man under punishment complained of a sore in his foot. On inspection I found a small punctured wound on the side of the sole. On asking him how he came by it, he replied that a piece of wood ran into his foot while walking to the closet. Knowing that he must have worn a shoe at the time, and that, therefore, if his story were true, there must be a mark of the splint having passed through it, I examined it, and found no trace of this having been the case; and, though consequently disbelieving him, I gave him, as usual, the benefit of the doubt, and ordered him poultices, bed, etc. His foot became much worse, and highly inflamed; he began to be alarmed (which feeling I did my best to increase), and at last confessed that he had run a piece of stick into his foot. The wound was, therefore, laid open, and I extracted two pieces of wood, each about an inch in length. He appeared very penitent, and promised never to repeat the offence. He was placed on hospital diet, his health having at this time suffered very considerably, and, the wound having healed slowly, he was discharged and began his punishment again. Three days after it reopened, and was nearly as bad as ever; and though he strenuously denied having tampered with it, on a strict watch being kept over him the officer in charge discovered, very neatly hidden in his cell, two inch pieces of pointed stick and one of stone, with string attached to them, that they might be placed and replaced at will within the wound."

So great is the detestation of many prisoners for work that it is only by having recourse to sharp repressive measures that the more frequent occurrence of cases of this description can be prevented, and hence it becomes the duty of the prison surgeon to report, without the least hesitation, any clearly-established instance of malingering, so that the culprit may be duly punished. Factitious ulcers and abscesses are, I believe, more generally resorted to in public works' prisons than any other form of scheming, chiefly because they disqualify for work for the time being, and because the convict knows that unless the evidence against him is beyond doubt, he will be treated as an ordinary patient, and escape punishment altogether.

There is another aspect of feigning occasionally exemplified in prison life, but which merits only passing notice—I refer to feigned attempts at suicide. Hanging is the mode usually selected, and the feigned attempt is characterized by being made at some opportune moment when the proceeding is sure to be interrupted. Sometimes a prisoner threatens to commit suicide in order to be put under observation, but I have always found that he may be safely left to his own resources without the least risk of his putting his threat into execution.

In bringing this sketch of feigned diseases to a conclusion, I am afraid that its practical utility may be somewhat curtailed owing to the special stand-point from which alone I could treat the subject clinically, and as a matter of personal observation and experience. But though the class of patients may vary, the same differential data are as generally applicable in the detection of feigned diseases as are physical signs and symptoms in the diagnosis of real disease; and hence it is chiefly in the *management* of feigned cases that the circumstances of the patient take effect. It is true the prison surgeon possesses facilities for enforcing strict observation, and the carrying out of his instructions, that are not at the disposal of those engaged in general practice, but he is none the less bound to obey those dictates of humanity which secure to the suspected schemer the "benefit of the doubt," and to the undoubted schemer protection from any kind of medical treatment bordering on the cruel or barbarous.

ARTICLE VIII.—*On the Treatment of Diabetes by Lactic Acid (Cantani's method).* By GEORGE WILLIAM BALFOUR, M.D., F.R.C.P.E., Physician to the Royal Infirmary, Edinburgh.

(*Read to the Medico-Chirurgical Society of Edinburgh,* 15*th November* 1871.)

TOWARDS the end of last century (1796) John Rollo first propounded the theory that diabetes mellitus consisted essentially in some morbid change in the functions of digestion and assimilation, and conceived the idea of remedying this anormal condition by cutting off from the food the supply of starchy matter from which he believed the sugar to be chiefly formed, employing also emetics, narcotics, and tonics. Rollo thus laid the foundation of that system of treating diabetes which still prevails, which, mainly dietetic, consists also largely in the administration of tonics and narcotics. In France this theory and treatment were adopted by M. Bouchardat (1841), who further showed that, for the complete conversion of starch into sugar, from seven to eight times its weight of water is required; thus accounting for the terrible and irresistible thirst of diabetic patients wholly irrespective of their excessive urination, which may be regarded as produced by the excessive ingestion of fluids rather than as its result.

The more important variations in the dietetic treatment of diabetes in recent times have been—1st, The use of alkalies, chiefly the carbonated alkalies, which is based upon Mialhe's theory (1843), that the sugar formed from the starchy articles of food in a healthy body is destroyed by the natural alkalinity of the blood, a property he supposed to be defective in diabetic patients. This theory has been shown to be wrong in every point, yet the treatment founded upon it has had a considerable amount of success. 2d, We have Reynoso's theory (1853), that the sugar in the blood of a healthy subject is burned in the lungs, and that it only appeared in the urine because of defective respiration; he therefore recommended a stimulating plan of treatment to increase the respiratory function; and the employment of the peroxide of hydrogen in modern times, as well as that of the permanganate of potass, is based upon this view of the origin of diabetes, which, although accurate enough in the fact that sugar does frequently appear in the urine of those whose respiration is impeded, is yet in so far defective that the development of grape sugar into lactic acid, the first stage of its combustion, requires no oxygen. 3d, Claude Bernard's remarkable experiments (1848)—which seemed to prove the nervous origin of this disease, but which Schiff showed could not act without a liver, and acted mainly, apparently, by producing hyperæmia of that organ—gave a considerable impulse to the use of narcotics and nerve sedatives, especially such as opium, codeia, and bromide of potassium, which so act upon the vaso-motor nerves as to reduce hyperæmia, all of which give considerable relief, and have had a certain amount of success. 4th, We have a modern return to the more purely dietetic treatment of diabetes in the employment of skim-milk as the sole article of food, a method of treatment which has been lately extolled by Dr Donkin of Sunderland.

Now, without entering more at large into the pathology of diabetes, it is obvious that these various modes of treating it are all underlain by one common fact—viz., that in diabetics the natural glycogenic function is discharged in a morbid manner, and that this morbid discharge of function may be importantly modified in two modes; 1st, by depriving the organism of that pabulum from which the glucose is mainly derived, and, 2d, by employing such remedies as are capable of altering the nervous energy of the organs at fault: practically it has been hitherto found of importance to conjoin these two methods.

The chemical treatment of diabetes by the attempted burning the sugar by artificially induced hyperoxygenation of the blood, has not been found more successful than the simple dietetic plan without this addition, and for the chemical reason stated this could not be otherwise. While the basis of the other chemical treatment, that by alkalies, has been shown to be erroneous, the blood of diabetic patients being not less alkaline than that of others on the one hand, while on the other, a fluid even more alkaline than blood cannot decompose glucose, so that if the alkaline treatment have really proved more successful than the simple dietetic plan, that must have depended on its exercising some modifying power over the function at fault—a modifying power, however, of so doubtful a character that it has not been able to prevent this method of treatment from falling, in this country at least, into comparative desuetude.

It is a matter of daily observation, that morbid alterations of function are frequently only to be permanently remedied by a restoration of the body to its normal standard, the great difficulty of promoting a cure in such cases being the impossibility of giving perfect rest to one organ while endeavouring to build up the frame, the skill of the physician being shown by the manner in which he solves this complicated problem, giving as much rest as possible to the organ at fault, while at the same time improving the general nutrition, and thus restoring the healthy tone to the constitution. It is in this respect that all the treatments hitherto propounded for diabetes have failed; they may have given rest to the organ at fault, but they have too often depressed the general health, and, while giving temporary relief, have possibly in many cases hastened the end; and even when a tonic treatment has been mainly relied on it has failed for want of physiological adaptation. It is in this respect that Cantani's treatment is pre-eminently useful; it relieves without depressing, it gives as nearly as possible perfect rest to the organ at fault, and at the same time builds up the body by an artificial adaptation of physiological means, and restores the healthy tone to the constitution, thus enabling it to return to healthy action. It is by no means put forth as a perfect cure for all cases of diabetes; it is a means of relief to all, but only a cure for some; yet it seems to act curatively in a larger proportion of cases than any other mode of treatment hitherto devised, while the relief to all is more perfect.

Professor Alnaldo Cantani of Naples agrees so far with Reynoso in believing that in diabetes the question is not so much one of increased production of sugar as of defective combustion; this he conceives to be proved by the small number of respirations made by diabetic patients and by their average low temperature, ranging, according to him, from 95° to 96°·8 F. in uncomplicated cases; the temperature, of course, rising with any complication—such as tuberculosis—giving rise to pyrexia, but always remaining below the normal of such pyrexia. This defective combustion he believes to depend upon the production of a morbid form of glucose, which he has termed *paraglucose;* this is incapable of being transformed into lactic acid, and therefore cannot be burned; it is consequently passed unchanged in the urine. The result of this is, that the sugar and starch of the food being transformed into this incombustible paraglucose, the heat of the body is in so far maintained at the expense of the albuminates and fats, and from the combustion of the former we have that excess of urea which adds so greatly to the density in many cases of diabetes, while, as the albuminates and fats which the patient receives as food are insufficient for his requirements, those of his own tissues are also employed, and hence his rapid emaciation.

In the early stages of diabetes the quantity of sugar passed in the urine oscillates with the diet, and with an exclusively animal diet is much lessened in twenty-four hours, and may entirely disappear in a few days; in the later stages, when sugar persists in the urine even after the withdrawal of all amylaceous food, Cantani believes that not only the inosite of the muscles may be transformed into paraglucose, but also that the gelatinous tissues, which Baedeker succeeded in transforming into sugar apart from the system, may in this anormal pathological condition become transformed into paraglucose, and thus account for the persistence of sugar in the urine of those fed exclusively on an animal diet apart altogether from the question of the albuminates themselves being transformed into diabetic sugar. Thus, though all diabetics are to a certain extent autophagic, we may yet have this abnormality developed to excess, and may thus have three steps in this disease: first, that in which the sugar oscillates with the quantity of amylaceous food supplied; second, that in which the inosite and gelatinous matter of the animal food are transformed into diabetic sugar; and, third, when not only these but also the inosite and gelatinous matters of the body of the patient himself are so transformed—a most severe and hopeless form of autophagia. Cantani, with most modern pathologists, recognises the liver as the organ mainly at fault in these cases; but whatever the organ may be, he proposes to give it as complete a rest as possible, by depriving it of its pabulum in subjecting the patient to a rigorous meat diet, thus reducing to a minimum the introduction into the system of the sugar-producing substances. But as that is only a temporary expedient, having reference to only one element of this disease, and incapable of arresting the waste and ultimate complete degradation of the body, he further proposes to prevent this waste by supplying a combustible agent in a quantity sufficient for the wants of the body, so that the fats and albuminates may continue to be stored, and the body thus gradually restored to its normal standard; and he hopes that this restoration of the healthy standard of the constitution, coupled with the prolonged functional rest to the organ affected, may suffice to prevent any relapse into its morbid condition even after a return to the ordinary dietetic conditions of modern civilized life. The result of Cantani's experiments have to a large extent proved the correctness of his views. The combustible agent which Cantani has selected is lactic acid, and it has been wisely chosen, inasmuch as it is in all probability that agent employed in the normal conditions of nutrition, representing as it does the intermediate stage between glucose and carbonic acid,[1] so that not only is a complete rest given to the organ at fault, but that very agent is supplied to the system which would have been normally present had the organ at fault been doing its duty after a normal fashion, so that while as complete a relief as possible is afforded to the organ at fault, there is in no respect any anormal strain put upon the system. The organ at fault is for the time being merely thrown out of gear, but all the other functions proceed in a natural manner, so that, when the normal tone of the organ has been re-acquired, it may again be replaced in the natural cycle without the harmony of the natural sequence of the functions being in any way interrupted either by the cessation or the restoration of its function. The quantity of lactic acid which Cantani administers is from 77 to 154 grains daily, diluted in from 8 to 10 fluid ounces of water, and taken during the day. His exclusively meat diet means rigorously one of plain meat, roast or boiled, without any sauces of milk or eggs, and certainly without any bread, flour, or any vegetable matter whatever, the only seasoning permitted being salt, oil, and a little vinegar. For drink he allows water, either plain or with a little of the purest alcohol; coffee, tea, and wine being prohibited. His results have been somewhat surprising. In recent cases the cure is stated to be almost certain and speedy; and even where an exclusively meat diet is not persisted in, life is apparently prolonged, and many of the unfavourable results of diabetes are prevented, though the mellituria is not arrested. Dr Sammut of Naples, from whose report I quote,[1] states that he has seen an army lieutenant enter the hospital emaciated, weak, and impotent, with polyuria, thirst, and extraordinary hunger. In twelve days the last trace of sugar had disappeared from the urine, and in six weeks the patient had gained nine pounds. He left the hospital in excellent condition—florid, strong, without thirst or hunger; he continued the treatment for two months more at home, and then resumed mixed diet, and after the lapse of eight months he was in excellent health, and weighed twenty-one pounds more than when he entered hospital, being also without a trace of sugar in the urine, though eating indiscriminately of all that came before him. A tailor from Naples was admitted in a desperate condition. He left florid and robust. Since then, for more than seven months, he has been eating promiscuously, and is more fat, rubicund, vigorous, and energetic than before his attack. Dr Sammut also states that he saw in Cantani's clinic several other diabetics—he mentions five—all much improved, and several believing themselves to be perfectly cured.

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[1] "What we have to do is to convert diabetic sugar—*i.e.*, glucose—into lactic acid."—Headland on the Actions of Medicine, 1867, p. 218.

These results are certainly very remarkable, and being a continuous series following the employment of a treatment based on rational considerations, are sufficient to claim the attention of every medical man interested in the progress of therapeutics. And I may remark that the latest treatment of diabetes propounded in this country—that by skim-milk—bears out Cantani's views in so far that it is a strictly animal diet, free from amylaceous matter, and containing three to six per cent. of lactin, which, under the influence of the caseous matter, becomes transformed into lactic acid. This treatment is therefore an approach, but a very meagre one, to Cantani's apparently more perfect system; and I may add that the results of the two systems in my own practice have fully convinced me of the greater applicability and more perfect success, so far as time allows me to judge, of Cantani's method.

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[1] *Vide* British Medical Journal, February 25, 1871, p. 208.

The first case in which I employed it was not a favourable one. The patient had been formerly much benefited by the conjunction of opium in large doses with the dietetic treatment. He returned two years afterwards with commencing phthisis, and though benefited somewhat by the lactic acid treatment, yet he died, as was naturally to be expected. His urine fell in five days from an average of about 250 ounces to 70 ounces in the day, the specific gravity remaining about the same—1·030; this high specific gravity being apparently due to the amount of urea and uric acid present, a condition of matters usual in this treatment. The deposit of red oxide of copper following the application of Trommer's, which had been copious, ceased entirely, and was replaced by a brownish discoloration due to the excess of uric acid present. No change took place on boiling with liquor potassæ (Moore's test). The poor man therefore lost the main symptom of his disease, but he died exhausted after about three months' treatment.

CASE 2.—David Hume, an engineer, aged 53, was admitted into Ward V. on July 14, 1871, complaining of great thirst, debility, and polyuria. Three years ago he suffered from a stroke of paralysis which affected the right arm and leg. He was able to resume work three months subsequently, but still complains of weakness in the right leg and dulness of hearing in the right ear. His integuments are rather dry, his joints normal, but his limbs are much emaciated, and he sleeps badly at night. Sensation and intelligence normal, but motion much impaired from his great exhaustion, having had to rest frequently in coming upstairs to the ward. He measures 5 ft. 7 in., and weighs only 8 st. 8 lbs. His tongue is dry in the centre, moist and clammy at the tip and edges, red, and glazed. His mouth and fauces dry. He has a constant bad taste in his mouth. His teeth are decayed. His digestion good, but his bowels usually constipated. His arteries are atheromatous, but the circulatory and respiratory systems otherwise normal. He calculates his total drink at 100 ounces daily, but he passes between 300 and 400 ounces of a pale-coloured urine daily, spec. grav. 1·030, and showing a large amount of sugar by the ordinary tests. He states that he has been under medical treatment for upwards of a year, but has nevertheless been gradually getting worse, and he dates the commencement of this illness between three and four years ago. Up to the 15th of August he received only ordinary diet and no special treatment, but this day he was placed upon a strict meat diet, consisting of 2 lbs. of boiled meat and 2 lbs. of steak in the twenty-four hours, which was the quantity he found to be sufficient. He was also ordered one teaspoonful of lactic acid in a tumblerful of water, to be taken in quantities sufficient to assuage his thirst. On the 29th of August his urine still contained sugar, was reduced, however, to 86 oz. in the twenty-four hours, his total drink being now stated to be 78 oz. This day he was ordered a bottle of diabetic koumiss in the day. Of this he, however, only drank about half a bottle daily. On September 1—his total drink being 48 oz.—he passed 48 oz. of urine rather deeper in colour, of spec. grav. 1·025, and containing no sugar. On October 1, the patient, having continued to improve uninterruptedly, was permitted to add to his diet four so-called bran biscuits, which contain, however, a large amount of starch,[1] and a cabbage. He takes his acid regularly. His total drink is now 36 oz., his total urine passed 40 oz., spec. grav. 1·025, and no trace of sugar. On October 20, two additional bran biscuits were granted to him; and on October 25 he was permitted to breakfast on porridge and skim-milk,[2] the bran biscuits being stopped, and his meat reduced to 2 lbs. daily, which is found sufficient. His weight is now 10 st. 7 lbs., and his urine keeps free from sugar. He was now put under surgical treatment for a stricture of the urethra, the lactic acid being continued, and bran biscuits gradually added to his porridge and skim-milk and meat diet, till he took six biscuits in the day. His drink and urine both averaged about 40 oz. in the twenty-four hours, the urine keeping free from sugar. On November 14, his weight was 11 st. in his drawers alone, and, feeling quite well, he was discharged. He was shown at the Medico-Chirurgical Society on the evening of November 15, and has orders to report himself occasionally, so that his further progress may be ascertained.

CASE 3.—Mary A. Early, a millworker, aged 15, admitted into Ward XIII., July 18, 1871, complaining of weakness, general malaise, polyuria, and diarrhœa, states that her present illness dates only from four weeks ago, when she was seized with headache, which lasted all day, nausea, great thirst, and diarrhœa. Her appetite being unimpaired, her previous health was good, and her family history unimportant. On admission her skin was hot and dry, limbs much emaciated, height 4 ft. 8¾ in., weight 4 st. 11 lbs. Complains of headache and great thirst. Her tongue is covered with a slight brown fur, moderately moist. Her bowels loose, several stools being passed daily. Her urine is pale, spec. grav. 1·030, and contains a large amount of sugar; its quantity is much increased, but cannot be measured on account of the diarrhœa present. Other symptoms normal. The diarrhœa was treated with chalk and opium mixture, and ceased in a few days. Her drink was now found to vary from 100 to 170 oz. daily, and the quantity of urine passed from 120 to 180 oz. On July 27, she weighed 4 st. 7 lbs., and was placed upon an *ad libitum* allowance of meat, of which she managed to consume about 2 lbs. daily, no extras. She had a bottle of soda-water daily, and two teaspoonfuls of lactic acid in a tumblerful of water as often as desired. The very next day her total drink sank to 32 oz., and her total urine passed to 22 oz. daily; and on July 29 all trace of sugar ceased to be discoverable, spec. grav. of urine remaining at 1·030, but containing a large quantity of uric acid and crystals of oxalate of lime; total quantity passed 20 oz., total drink 40 oz., in the twenty-four hours. After this she continued to drink with almost unvarying regularity 40 oz. in the day, passing from 28 to 40 oz. of urine, averaging 33·5 oz. daily for the three months, August, September, and October. On August 7, she weighed 4 st. 6 lb., having lost 1 lb. since being put upon her restricted diet, and on the 12th her weight remained the same. She says she feels quite well, but is unable to walk much or even stand long from a feeling of weakness across her loins. August 19.—Patient weighs now 4 st. 7 lbs., spec. grav. of urine 1·030, no sugar. On August 12, she was offered cabbage or green vegetables, which she declined, and was then allowed to get half a slice of toast in the day; but this was stopped on the 20th, on account of a slight trace of sugar which was found in the urine on that day. On August 25, the patient weighed 4 st. 8¼ lbs., and was permitted to have some diabetic koumiss for drink. She did not like it, however, and only managed to drink three bottles of it between this date and October 3, when it was stopped. On September 17, patient weighed 5 st., and sugar having remained absent from the urine from August 12, she was allowed to have half a slice of brown bread daily. On September 30, patient weighed 5 st. 5 lb., a marked quantity of sugar was found in her urine, but as it was distinctly traced to her having eaten a slice of white bread and jelly which she had got from another of the patients, she was permitted to continue the brown bread. October 9.—Weighed 5 st. 7 lb. Brown bread stopped on account of slight discoloration of the urine when boiled with liquor potassæ. October 14.—Patient weighs 5 st. 9 lbs., and on 14th November 5 st. 10 lb., her height being 4 ft. 8¾ in. October 17.—The urine keeping free of sugar, the patient was allowed to have four bran biscuits in the day, which contain a notable quantity of starch; and on the 27th these were stopped, and porridge and skim-milk ordered for breakfast.[1] About the end of a week, however, a trace of sugar reappearing in the urine, the porridge was stopped, and for another week she was relegated to her meat diet, of which she takes about two pounds daily. After doing penance for one week she was again permitted to have her four bran biscuits, which she has continued to this date. November 16.—Her urine keeping free from sugar, 36 oz. in quantity, and spec. grav. 1·030.[2] Obviously this girl is far from being in the same satisfactory condition as Hume, but, considering her youth and the well-known obstinacy of diabetes in youthful patients, I think there is every reason to be thankful for the improvement she has made, and also strong grounds for hope that a more prolonged treatment will ultimately result in her restoration to health.

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[1] Weighing on an average 1¼ oz. each.

[2] 1½ pint of porridge made from 4½ oz. oatmeal, and 1 pint of milk.

CASE 4.—U. M., æt. 25, an out-patient at the Infirmary, states that he has laboured under diabetes, so far as he knows, for three or four years, and has been frequently under treatment, without much benefit. There was a large quantity of sugar in his urine: he was ordered strict meat diet, with lactic acid and water for drink; to take not less than three, or more than four, teaspoonfuls of the acid in the day. Within a week he had gained two pounds in weight, and the sugar had sunk to a mere trace. The following week his weight remained the same; but he was fresh and hearty, the sugar a mere trace; his thirst had disappeared at once. He has been little more than two weeks under treatment; so all that can be said of him is that his case is hopeful. His stationary weight was probably due to his taking a considerable amount of exercise, at the same time restricting himself to only two pounds of meat in the day. He was ordered to take any quantity of meat he could consume; but as his time for calling has not yet come round, the result is not known.

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[1] Of this she only took about half a pint in all daily.

[2] Cases 2 and 3 have been condensed from the reports of A. J. M. Bentley, Esq., M.B., the resident physician.

Case 5.—A. L., admitted into Ward V. on 19th October 1871; says he has only laboured under diabetes for nine months, but is nevertheless greatly emaciated. The lactic acid treatment in this case certainly benefited the patient—the sugar entirely disappearing in a few days. He could not, however, be prevented from breaking through the rules and indulging in bread and other forbidden luxuries, and he was therefore dismissed on 17th November.

Case 6.—M. W., a girl aged 17, an out-patient of the Royal Infirmary, came under treatment, first, on the 3d November 1871; states that she has been ill about five months, and that she has been under treatment for three or four months, but has been getting gradually worse. She measures 4 ft. 8¾ in., and weighs 5 st. 2 lbs. Her urine is of a pale straw colour, and quantity large but unknown, spec. grav. 1·045, giving, with Trommer's test, a copious deposit of the red oxide of copper, and becoming of a dark mahogany colour when boiled with liquor potassæ. She was ordered a strictly meat diet, with a cupful of skim-milk for breakfast, and no other drink but water: three or four teaspoonfuls of lactic acid to be taken during the day. Nov. 11.—Urine same colour as formerly, spec. grav. 1·045; deep yellow discoloration with Trommer's test; no deposit; yellowish brown with the liquor potassæ. Has lost one pound in weight, but has had diarrhœa, more or less constantly, during the week, which may account for it. Thirst greatly lessened, and feels better. Nov. 18.—Weighs now 5 st. 5 lbs., having gained 3 lbs.; has a good appetite, and eats sometimes as much as 3 lbs. of meat during the day, and always 2½ lbs., besides a cup of skim-milk for breakfast; has now no thirst, and feels and looks fresh and well. Her urine is of a pale yellowish colour, acid, spec. grav. 1·030, giving a yellowish colour, and no deposit, with Trommer's test, and only a pale straw coloration with liquor potassæ. This girl, considering her youth, is obviously progressing favourably, and I hope to be able to give a good account of her at a future period.

CASE 7.—R. A., æt. 35, has suffered from polyuria for at least nine months, and has gone down from 10 st. to 8 st. 11 lb., his height being 5 ft. 10 in. He has such intense thirst that his tongue cleaves to the roof of his mouth, and the more he drinks the thirstier he gets; voracious appetite, and digests well; bowels costive, skin dry, and feels always chilly. Has no sexual desire, and has great languor both of body and mind. For the last three months has been subject to repeated attacks of an epileptiform character; his eyes seeming to go out of focus, and consciousness to be partially lost for a second or two; these attacks occur on the street occasionally, but most frequently on getting out of bed in the morning, or just after taking a cold bath. October 14.—Urine pale-coloured, quantity large but unknown; spec. grav. 1·040; contains a large amount of sugar. Ordered a strict meat diet, with beef-tea or plain soup if desired; three to four teaspoonfuls of lactic acid in water during the day, a little whisky and water at night, with claret during the day if desired, and also a bottle of diabetic koumiss, or as much of it as can be taken. The stimulants were permitted as the patient had a good deal of moving about before him, and his condition obviously required them. Within a week he felt much better, his thirst quite gone—in fact, he complained of having, as he thought, too much to drink; and he had gained two pounds in weight. On the 27th of October he weighed 9 st. 3 lb., was free from thirst, his drink amounting to 56 oz.; his urine was 66 oz., spec. grav. 1·028; and, on being boiled with liquor potassæ, its colour closely resembled No. 4 of Vogel's table of urinary colours. He was now permitted to add fowls, fish, and eggs to his diet, which had been hitherto strictly limited to beef and mutton, boiled or roast. On the 10th of November, his weight was 9 st. 5¼ lb.; and the average amount of urine passed during the fortnight averaged 56 oz., of an average spec. grav. of 1·033. On 14th November, however, he passed 30 oz. of urine at once in the morning, double his ordinary quantity; and on the 15th it was found to be of a pale amber colour, acid, spec. grav. 1·032, and gave a slight trace of sugar with Trommer's test, and a slightly darker tint than on the last occasion with the liquor potassæ. Obviously, some article in his diet was disagreeing; he was inclined to blame the koumiss, or perhaps the eggs, of which he had taken eight in one day; while I suspected he had got flour of some sort accidentally introduced into his food at some hotel. Be that as it may, however, he was at once again placed on a rigid meat diet, and already his urine has gone down one half. He looks and feels well, and is now almost free from his nervous symptoms, having only once had a slight threatening since coming under treatment.

These cases are very imperfect, and are only published on account of the importance and novelty of this mode of treating this hitherto so intractable disease, in the hope of enlisting others in the same inquiry, and thus more speedily determining its real value. This treatment is simple, physiological, and its results—viewing them as an unselected and continuous series—are certainly sufficiently remarkable to demand attention, being far before anything I have hitherto been able to attain by any other method whatever.

The lactic acid I have employed has been that obtained from the druggists, fluid, not syrupy, of a spec. grav. of 1·027, and with the ordinary musty smell of sour milk. Three to four drachms in the day seem to be quite sufficient for all practical purposes; yet much more may be taken without detriment,[1] cases 2 and 3 occasionally taking as much as eight or nine fluid drachms in the day. The remedy is, however, as yet rather too expensive to be employed in larger doses than are absolutely necessary, as it costs ten shillings a pound; a more extended application will, of course, speedily cheapen its production.

The great advantage of this treatment is the prospect which it holds out of a comparatively speedy restoration to ordinary mixed diet, with persisting absence of sugar from the urine—of rapidity of cure, in short; and this rapidity is in itself a great encouragement to such patients steadily to persevere, in spite of the irksomeness of a diet rigidly restricted to meat, which seems certainly to be required for two or three weeks at least, after which, fish, fowl, and green vegetables may be added, and other relaxations gradually and cautiously permitted, provided the case progresses favourably. I fancied that the koumiss was of considerable benefit in Hume's case, and if its composition be correctly stated, it ought to be a useful diet for diabetics, but a rigid analysis is still requisite. It is prepared by Chapman of Duke Street, London, and is said to consist of milk, fermented in a warm place by the addition of a small quantity of very sour milk; it effervesces slightly, and is pleasant to the taste, being apparently composed of the caseous matter in a state of extremely fine division, lactic acid, and a certain amount of alcohol, besides the fatty matter and salts ordinarily present in milk. The only apparent drawback to it is the statement that in cold weather it may act as a diuretic—an action which is certainly not required in diabetes.

Bonthron's diabetic biscuits are perfectly palatable, and I fancied they might prove a welcome addition to the very limited dietary permissible under Cantani's treatment. They are said to be prepared from finely-ground bran, washed as free from starch as possible, and mixed with albumen and butter. I procured some of these biscuits, and had them analyzed by Dr Stevenson Macadam, of Edinburgh; and the analysis, which I append, shows them to be wholly inadmissible in the early stages of this treatment, while, after a certain stage has been reached, they are not required, the ordinary bran biscuits of the shops, which are much more palatable, being perfectly sufficient, and forming an admirable introduction to more mixed dietary.

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[1] In particular, I have never seen any rheumatic pains produced; and if the acid be kept within proper physiological limits, it is impossible that they ever can be, otherwise we would all be rheumatic.

Analysis of Sample of Bonthron's Diabetic Biscuits, received from Dr G. W. Balfour.

Moisture,	18·84
Oil,	6·06
Albuminous compounds,	35·56
Starch, with some gum, dextrin and sugar,	34·58
Woody fibre,	3·84
Ash,	1·12
	100·00
Nitrogen,	5·69
Phosphoric acid in ash equal to ordinary bone phosphate,	0·78

(Signed) STEVENSON MACADAM, Ph.D.

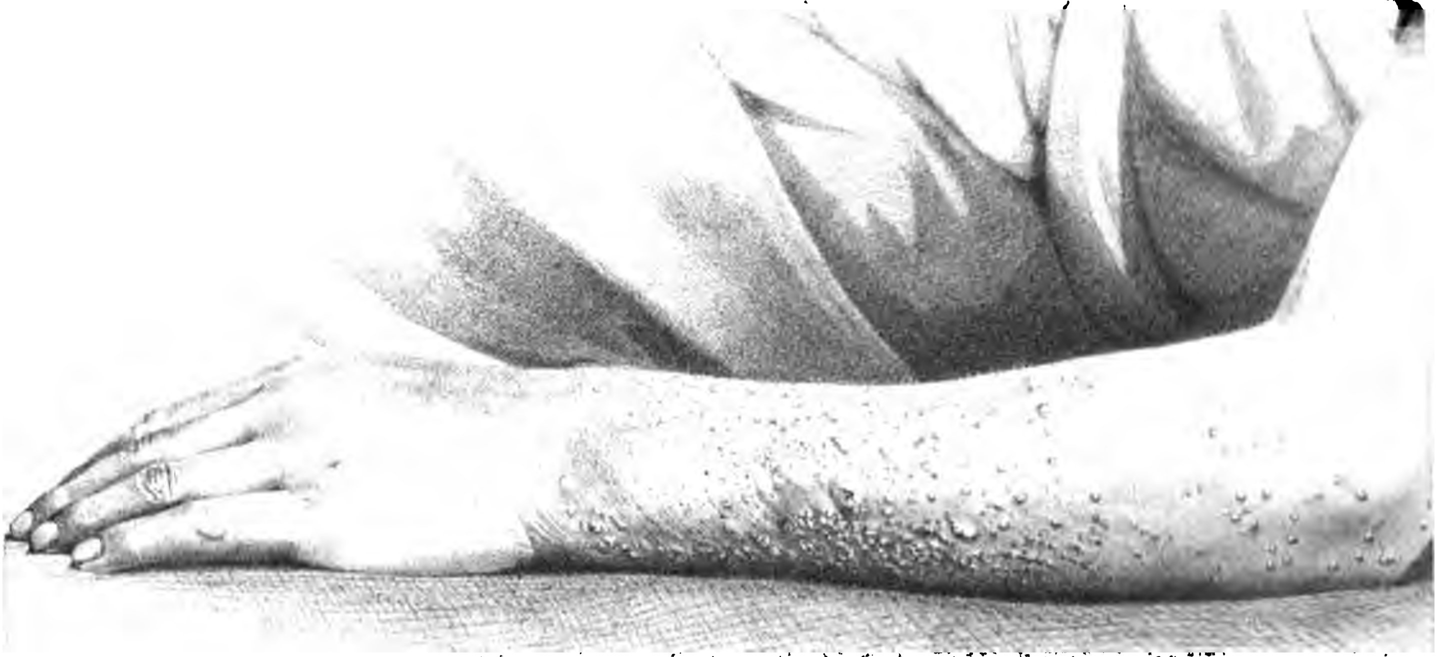
ANALYTICAL LABORATORY, SURGEONS' HALL,
Edinburgh, 16*th Nov.* 1871.

These biscuits, therefore, contain practically one-third of their weight of starch.

ARTICLE IX.—*On the Local Effects of Crude Paraffin.* By ALEX. OGSTON, M.D., Aberdeen.

THE Messrs Miller's Chemical Works at Aberdeen have afforded the opportunity for collecting the following information concerning the appearances produced on the skin of those engaged in the manufacture of paraffin, which seems of sufficient interest to warrant being recorded:—

The workmen engaged in this manufacture have the skin over portions of their bodies, more especially of the hands and arms, but also of the feet and legs, brought daily for many hours at a time into contact with the paraffin shale, and with the oily matters mixed up with it, the result being an eruption of nodules and pimples on the skin so exposed, speedily breaking out on those who are for the first time engaged in it, lasting for a few weeks or months, and then generally diminishing or disappearing. In a few exceptional individuals the eruption does not disappear, but, assuming a chronic



Keith & Gibb,

ACUTE EFFECTS OF CRUDE PARAFFIN.

Lithog.rs Aberdeen.

character, produces so marked and prolonged an affection of the skin that the general health becomes impaired, and the cessation of this employment becomes a necessity. The appearances differ in the two classes of cases, acute and chronic, and, while the essential alterations in the skin remain the same, the presence of inflammatory action in the acute, and its absence in the chronic forms, leads to a marked distinction between the two, and admits of their being separately described.

In the *acute* form of the eruption, which soon appears in those exposed to the influences of crude paraffin, the skin of the hands, wrists, arms, feet, and legs becomes covered with a rash of bright red nodules, closely approximate to each other, and usually largest and most numerous on the wrists, or wherever the dress tightly embraces the skin; the dorsal aspects of the parts being most severely affected, and the palms of the hands and soles of the feet enjoying a complete immunity. Similar nodules arise, though to a less extent, on the face, neck, and other parts of the body to which the oily matters find access.

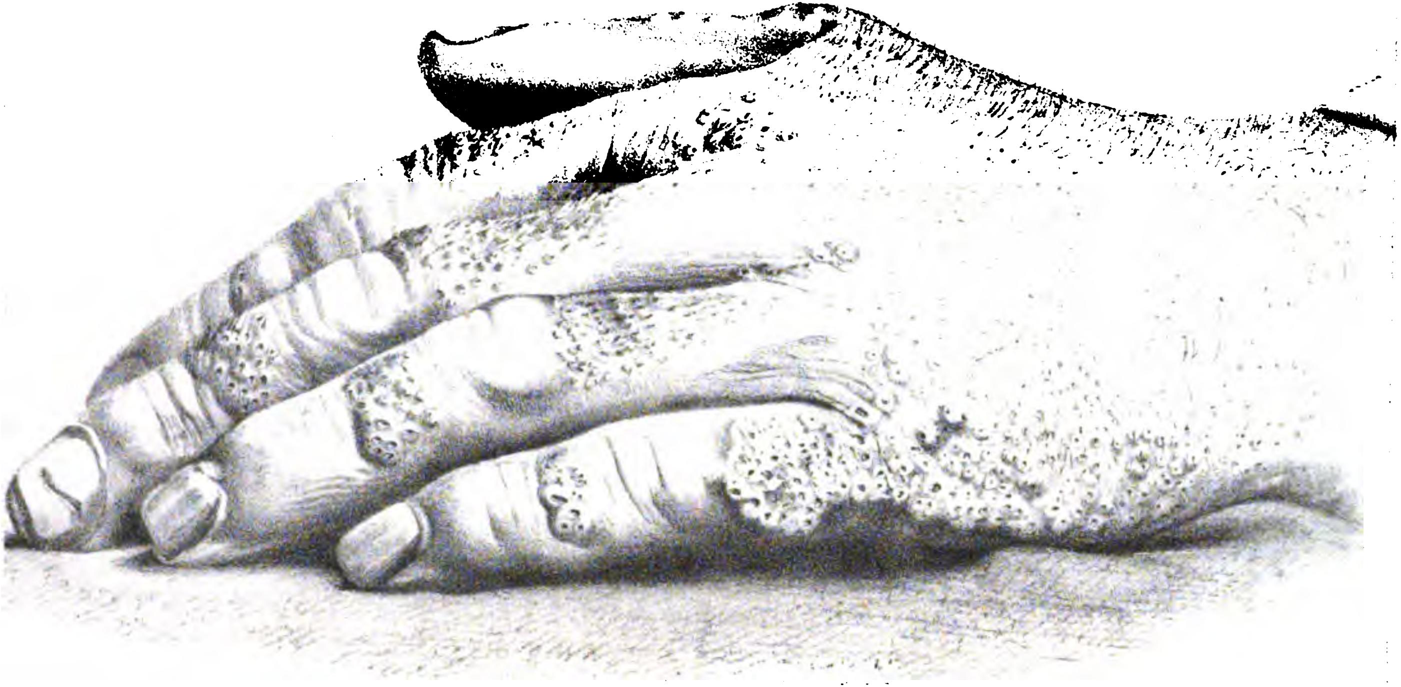
On examining minutely the skin of those affected in this way, the following are the leading peculiarities of the eruption:—The bright red nodules, hard to the touch, tender on pressure, varying little in size, which is about equal to that of a grain of barley, are of a rounded form, and consist each of a single hair-follicle with the parts immediately surrounding it, which are inflamed, indurated, and reddened. The hair emerges from the very summit of the nodule, and the orifice of the hair-follicle is much enlarged and easily visible to the naked eye as an aperture of a magnitude similar to that of a pin-hole in a card. The dilatation extends to the deeper part of the follicle, which forms the kernel of the inflamed knot, the retention of its contents evidently contributing to the inflammatory induration around. The gaping mouth of the follicle exhibits masses of cast-off epithelial scales, dry and friable instead of greasy and tenacious; the nodule has little of the tendency to run on to suppuration observable in an ordinary *comedo*, and its contents cannot be squeezed out. On the contrary, the redness and induration, after remaining for some little time, gradually diminish, and finally disappear, leaving the hair-follicle enlarged, and its mouth gaping so as to exhibit the retained epithelial masses, these latter being rendered more distinct by continued retention and accumulation of dirt. In fact, the *acute* form of the eruption consists of successive crops of these nodules, which are thus at the same time seen in all stages of their growth, full development, and subsidence; while the skin between them, studded with the black gaping mouths of such follicles as have already passed through or are about to undergo the process, retains, contrary to what is observed in the chronic form of the malady, its natural pliancy and elasticity.

In all paraffin-workers patency and enlargement of the hair-follicles continue to some extent so long as they are engaged in this manufacture, and the black dots in the skin of their hands and face strike the eye of the observer at once; men with dark complexions and strong hair being especially deformed in this way, while fair complexions and light or reddish hair escape comparatively unaffected.

A few exceptional individuals, with swarthy complexions and hairy skins, suffer so much from an exaggerated patency of the follicles that they are compelled to quit their occupation and seek a more suitable calling. When the disease assumes this *chronic* form it exhibits the following characteristics:—The backs of the feet and toes, the dorsum of the hand, and the backs of the fingers between, but not over, the joints, exhibit a peculiar honeycombed appearance of the skin, which is elevated, thickened, and inelastic, so as to prevent or render difficult and painful the flexion of the fingers and hand. These elevated honeycombed patches are of natural colour, and not inflamed (except where an isolated papule exhibits the appearance described under the acute form), but consist of densely-grouped arrays of hair-follicles, with the indurated cutis between and around them, the follicles packed with dry brittle accumulations of epithelial scales, so extensive as to be easily visible through the dilated mouths of the follicles, these latter being large enough to admit the extremity of an ordinary probe. The hairs themselves have disappeared from these patches, having probably become atrophic from the pressure of the epidermic masses, while cracks and bleeding fissures traverse the indurated parts, and in rare instances a follicular abscess gives variety to the picture. The knuckles of the fingers and toes, the palms of the hands, and the soles of the feet, remain unaffected by the disease. In the subjects of the chronic malady the complexion is pale and the tongue foul, while the loss of flesh betrays the effects of the sleepless nights caused by the constant irritation and pain of the skin of the affected extremities.

The *modus operandi* of the crude paraffin in producing these results seems to be as follows:—The oily matters in the shale, called "blae oil," when separated, are both penetrating in their properties and irritating to the skin; and, coming continually in contact with the epidermis, soak into the hair-follicles, where they create an irritation soon leading to induration and increased exfoliation of epithelial scales. This exfoliation is not counterbalanced by increased expulsion of the scales, owing doubtless partly to the large quantities cast off, and partly to the usual fatty and lubricating substances mixed up with them being dissolved out and removed by the "blae oil," thus leaving the brittle epidermic masses plugging the follicles, and increasing the inflammatory irritation. (The palms of the hands, soles of the feet, and knuckles of the fingers and toes—places supplied with sweat-glands but no hair-follicles—escape the irritation, from the watery contents of the sudariparous pores presenting an obstacle to the ingress of the oil.) After a time the hairs on the

Plate II



Keith & Gibb, Lithog^s Aberdeen.

CHRONIC EFFECTS OF CRUDE PARAFFIN.

most exposed parts become atrophic and fall out, but the continued retention of the epithelial masses keeps up the process in the follicles and the induration of the surrounding skin.

The workmen are in the habit of employing "shale spirit" to wash the affected parts, whether with any beneficial effect is, I think, doubtful.

Part Second.

REVIEWS.

Introductory Notes on Lying-in Institutions, etc. By FLORENCE NIGHTINGALE. London: Longmans and Co.: 1871.

THE obstetrical world is proud to number among the contributors to obstetrical literature the justly-renowned Miss Nightingale. Her history and qualifications, both in experience and in mental power, entitle her work to the most careful and respectful consideration, and we are sure that everywhere it will be so regarded.

Although her work is a statistical essay, and is duly hard, angular, and in form sternly logical, yet she does not disdain the use of a graceful drapery which does not interfere with utility. The book is dedicated to Phænarete, and a prayer is added to her great son. The choice of a woman to hold this place of honour at the beginning of the work is balanced by an address to the sex at the end of it; which is, upon the whole, an epitome of good advice in the present stage of the medical education of women. Advice is truly much needed by that obstinate set of ladies who will force themselves on reluctant men, and who seem utterly blind to the truth that, if men are unwilling, they should not be compelled; and the truth that, if any great object is to be gained, it is in every sense best secured by the unaided efforts of those who desire it. Women are at perfect liberty to organize schools, and hospitals of every kind and description; and many men are anxious to help them. But Miss Nightingale is not always, in our opinion, a true interpreter of the feelings of her sex. We believe she is very wide of the truth when she says to women:—"Here is a branch so entirely their own, that we may safely say that no lying-in would be attended but by a woman if a woman was as skilful as a man—a physician-accoucheur." Again she participates in the failings of her sex and of ours, and shows ignorance of the true method of appreciating medical men, when she stimulates women to emulate the Sir James Simpsons and the Sir Charles Lococks, and to get practice among imperial and royal ladies. Two of the most contemptible of aims—a great reputation as a medical practitioner, and attendance on imperial and royal ladies—things which are no index of greatness or of capabilities, and which are snatched generally by men of talents and ambition, who have good fortune, a quackish disposition, and the arts of a lady's maid, who can always simper and dally with truth. The noble men of the profession of medicine are not those of the greatest contemporary reputation, nor are they in attendance on imperial and royal ladies. It is indeed well known that if a practitioner is truly great, and boldly in advance of the weakness and folly of his day, he cannot be highly popular. Men of immense reputation and in attendance on imperial and royal ladies have no time or stomach for laboriously-gained experience, but have the brass of audacious pretension. If Miss Nightingale knew what trash medical practice and medical reputation were made of, she would not speak as she does. The science of medical practice has scarcely been begun. Miss Nightingale does not need to be told what fashionable medical practice must be. Miss Nightingale's book, though well composed, having noble aims, and making several valuable contributions and suggestions on the subjects discussed, will not enhance her reputation as a scientific woman. Through every page we find running some threads of fundamental error, which of course greatly diminish the value and utility of the whole work.

Far from the greatest, but that which most astonishes us, is a moral error, an anti-Christian sentiment, which does not colour her whole book, but crops out at page 89. Speaking of unmarried mothers of a first child, she says, "It would never do, morally, to make special provision for them. And for this very reason we seem bound to receive such, conditionally, into well-regulated lying-in institutions, and afford some kindly care to prevent, at the very least, their sinking lower. But it would not be right to leave any admissions for single women in the hands of any young assistant, or morally inexperienced person." This passage we cannot discuss, but shall satisfy ourselves by turning it into a Christian form. We are bound morally to make the best provision—special provision, if that is best—for unmarried mothers, not only of first, but of subsequent children, and for adulterous mothers; indeed, for all mothers. Kind care should be given, totally irrespective of moral delinquency. The lower or more degraded the object, the greater the charity. Any young assistant who is fitted for admitting married women is fitted for admitting single. We are not aware that the married who enter a lying-in hospital are anywise better than the unmarried. We are sure that every consideration, and equal consideration, should be given to all. Is any sister to be neglected in her time of weakness and suffering, or treated less kindly than another? God forbid that such a sentiment should rule charity.

We now come to an error which is at once medical and logical. Miss Nightingale speaks and argues as if there should be no puerperal deaths, at least no deaths from puerperal diseases. "Such ought never to arise after delivery in a properly constructed and managed institution." We cannot allow ourselves to criticise such nonsense. There are really no conditions known which prevent puerperal deaths. They are the result of puerperal fever, when everything that can be imagined by the most ingenious is most favourable to recovery. No doubt their number may be increased and may be diminished. This every one knows. Miss Nightingale's view is not more unreasonable than would be that of a surgeon who should say that pyæmic deaths should never occur after amputation in a properly constructed and managed institution.

Miss Nightingale is not sufficiently careful as to her facts. She discusses the Waterford Lying-in Hospital without observing that it selects the married, cruelly excludes the unmarried; and that the patients are recommended by subscribers. She in another place boldly contradicts the general opinion as to the high death-rate of unmarried women, giving as sufficient evidence (p. 56) some data of the Liverpool Workhouse, which absolutely prove nothing in regard to it. Comparing workhouse lying-in wards and lying-in institutions, she most erroneously says,—"In both classes of establishments the same attention is doubtless bestowed on ventilation, cleanliness, and frequent change of bedding." We happen to know a lying-in institution which was as filthy and abominable as a Neapolitan prison in the old time. Why does Miss Nightingale not make use of the Dublin Hospital, apparently studiously avoiding what is by far the best mass of evidence for and against her views? We cannot divine. Why does Miss Nightingale not consider and, if possible, refute the bold statement of Stokes, an old, a wise, an experienced man, that the Dublin Hospital cannot be shown to have worse results than occur in the private practices of the best Dublin practitioners? Miss N. is very credulous—carelessly credulous. She, without a word of comment, far less of comforting assurance, tells us that in thirteen London workhouses there were 2459 deliveries, but no deaths in childbed!!! Has Miss Nightingale forgotten that her own normal mortality is a little more than 1 in 200?

The chief error of the book is the last we shall notice. Our authoress desires to improve lying-in institutions, and she virtually states her case in this way:—The normal mortality of lying-in women is 5·1 per 1000: the mortality in lying-in wards is many times the amount of what takes place in home deliveries: therefore, lying-in institutions must be improved or abolished. Now, neither of the propositions is true, and the conclusion is, of course, not just. If she had said that all maternities should be improved, and that many should be either improved or abolished, we should quite agree with her, though the conclusion would not have followed from the premises.

Following the example of Dr Matthews Duncan in his "Mortality of Childbed," etc., she makes the inquiry, What is the normal death-rate of lying-in women? the first step in the discussion. Her conclusion is, that it is 5·1 per 1000, or a little more than 1 in 200. The determination of Duncan is a little less than 1 in 100, and we cannot hesitate, meantime, to prefer the latter. It is impossible to study the induction as conducted by the two authors and escape from this preference.

Miss Nightingale relies mainly on the Registrar-General's data, whose fallaciousness is well known. She truly remarks that the statistics of home-practice are as open to the charge of want of accuracy as those of the Registrar-General or Le Fort. But she forgets that the inaccuracy of the records of private practice can only be in making the mortality too little, not on the other side; that the inaccuracy by omissions in the registers are known, while no such are known in good private records. She ends her argument, whose object is to make hospitals look bad, by reference to the data of Mr Rigden's practice; but she makes this reference utterly vain as a support of her views, by stating that his figures relate only to the first fortnight after delivery. We know many doctors who allege that they have thousands of cases and no deaths, who surpass Mr Rigden!! At the same time, we could adduce large and credible hospital experience, recorded by Miss Nightingale herself, which reveals a success as great as can be well attested in any kind of practice or in any part of the world.

In conclusion, we heartily recommend the work of Miss Nightingale to our readers. We join in her aspirations after improvement in maternities. We recognise her practical knowledge of hospital management in all its details, and the wisdom of her remarks on the administration of these institutions. The architectural sketches which her book contains are useful hints in this department, and will no doubt be duly appreciated.

Essay on Growths in the Larynx. By MORELL MACKENZIE, M.D. Lond., M.R.C.P., etc., etc. London: J. and A. Churchill, New Burlington Street: 1871.

IT is seldom, even in those days of cheap printing, that a book so unexceptionally well got up as the present is offered to the profession. The style and type are excellent, and the woodcuts, engravings, and chromo-lithographs with which the work is profusely illustrated, are remarkable for their softness and finish. The greater portion of these, we are informed, are the production of Mr Lennox Browne, a gentleman of great artistic taste, whose pencil promises to be of eminent service to the profession. It would be difficult to speak of Dr Mackenzie's performance too highly. He has had the necessary experience for writing such a work, and has the power of communicating his thoughts in such a way as to render what he has to say very acceptable to the reader. This in itself is an important recommendation, the more especially when, as in the present instance, the subject is comparatively new and involved. Isolated cases of laryngeal polypus can be traced to the time of Koderik, who operated successfully on one in 1750. It was, however, a century later, viz. 1850, before a complete monograph appeared on the subject. In this year, Ehrmann published his celebrated treatise, "Histoire des Polypes du Larynx," which included 31 cases of laryngeal growth. In 1851, Rokitansky brought forward 10 additional cases; and in 1852, Dr Horace Green of New York published 39 cases. In 1853, Dr Gurdon Buck collected 49 cases. In 9 of those cases only were attempts made to remove the tumours during life. The means of diagnosis and the mode of treatment were alike imperfect, until Czermak perfected the laryngoscope and devised the laryngeal mirror. Czermak, by the aid of the latter, detected a warty growth on the right vocal cord in the beginning of 1859, and since then upwards of 200 cases have been treated. The laryngeal mirror enables the observer to see the true state of the larynx, and to make out in many cases the exact nature of the tumour. It also guides him in his treatment. By this very simple and efficient arrangement, diseases of the larynx have been transferred from the inexact to the exact region of knowledge. The practitioner is no longer called upon to grope in the dark. Considerable dexterity is required in using the laryngoscope, and in operating upon tumours and abnormal swellings and ulcers in the interior of the larynx. The practice, however, is comparatively safe, and will become daily more so in proportion to the number of cases treated, and the dexterity of the operators. In Britain, especially, it is a matter of importance that the interior of the larynx should be under observation. Dr Morell Mackenzie has had unusual opportunities for perfecting himself in this department of surgery. He has had under observation something like 150 cases of growths of various kinds. Of these 100 were treated with the following result: 77 cured, 18 improved, 3 negative result, 2 deaths. The result is therefore in the highest degree satisfactory. Dr Mackenzie has tabulated his 100 cases in a very convenient form for reference, the table giving the date, sex, age, occupation, symptoms, situation, pathological nature, treatment, and result in each case. He has in addition, and at immense labour, appended a record of all the published cases which have been treated since the invention of the laryngoscope in England, France, Russia, Italy, Austria, and Hungary. He has, therefore, gone as fully into the literature as the practice of his subject. Dr Mackenzie has figured the general and microscopic appearances presented by his cases, and also the instruments employed in the treatment, so that neither time, labour, nor expense, has been taken into account in the production of his really admirable work. The book is divided into seven sections. In the first, we have a valuable historical *résumé* of the subject of Laryngeal Tumours; in the second, an enumeration of the Causes which lead to their Formation; in the third, the Symptoms produced; in the fourth, the Diagnosis; in the fifth, the Pathology; in the sixth, the Prognosis; and in the seventh, the Treatment. We have thus a very comprehensive whole. Space will not admit of our giving a detailed analysis of Dr Mackenzie's excellent treatise; nor would liberal extracts from the body of the work convey to the reader an adequate conception of its completeness. The book must be obtained and read. To all those who really take an interest in the scientific advance of surgery, the book is indispensable. It will not be too much to say that the entire profession is under a deep obligation to Dr Mackenzie for his really interesting, instructive, and opportune essay on "Growths in the Larynx."

Personal Experience of Lithotomy in India. By WILLIAM CURRAN, L.R.C.P. Edin. Reprinted from the Dublin Quarterly Journal for May 1871. Pp. 34.

THOUGH we do not often notice reprints, yet we may just tabulate the results of the stone experience of Dr Curran and his friend Dr Grant—the latter's especially being very remarkable. Mr Curran operated on 31 cases, 2 of which died. Dr Grant operated on 112 cases, all by lithotomy. Of these only 2 died, and he had 84 successful cases in succession. Of 193 cases operated on in the Meerut circle during a period of six months, 18 died, or 9·3 per cent. These results are very good.

The pamphlet is illustrated by several drawings of instruments used by the natives, and by a capital picture of a native doctor operating for stone.

A Treatise on Horse-Shoeing and Lameness. By JOSEPH GAMGEE, Veterinary Surgeon, formerly Lecturer on the Principles and Practice of Farriery in the New Veterinary College, Edinburgh. London: Longman, Green and Co.: 1871.

THE great value of the horse in a commercial point of view, and the fact that his value deteriorates in proportion to the unsoundness of his feet and limbs, sufficiently justify Mr Gamgee's attempt to improve the art of horse-shoeing. The direct connexion which exists between horse-shoeing and lameness is so obvious that it only requires to be mentioned. On economical grounds, as well as on the score of kindness to the noblest animal that lives, it is a matter of the utmost importance that the horse be well shod. To shoe a horse well, implies a knowledge not only of the structure and function of the foot, but also of the limb, and by implication of the entire body. In this respect Mr Gamgee is a master in his art; for he has not only repeatedly anatomized the horse, but he has watched and analyzed its movements under all possible conditions. His paper "On the Action of the Horse," in the *Journal of Anatomy and Physiology* (vol. iii.) is simply invaluable. Nor does Mr Gamgee's claim to be regarded as an authority in all that pertains to the foot of the horse and the shoeing thereof stop here. He is eminently a practical man. He has worked with his hands as well as his head—has been apprenticed to Vulcan, and has wielded in his youth the ringing hammer in the glowing forge. He is therefore conversant with all the mechanical details of the craft of the working farrier. Mr Gamgee, in addition to all his head and hand lore, has travelled, and is familiar with the practice of farriers and horse-shoers in Italy, France, and other parts of the Continent. He has grown gray in his calling of veterinary surgeon and lecturer, and the book which he now presents to the public, "On Horse-shoeing and Lameness," is the result of fifty years' observation and experience. As his opportunities for acquiring knowledge have been second to none, so his "finished work" will bear a favourable comparison with all similar works, ancient or modern. Mr Gamgee's book is in many respects a masterpiece. It is exceedingly well written, most interesting, beautifully printed, and illustrated by quite a large number of remarkably well-executed woodcuts. The work is very properly divided into two parts; the first part treating of "The Foot and Shoeing," the second of "Lameness." Here we have, as it were, the cause and the effect. In the first part we have an historical introduction of great value, which is followed by chapters on "The Foot; its Form and Functions;" "On Preparing the Foot;" "On making Horse-shoes;" "On Clips, Calkins, and Toe Pieces;" "On Fitting Horse-shoes;" "On Nails, Nailing, and Finishing;" "On Shoeing Horses for the Field and Turf;" "On Plating Race-horses;" "On Frost-sharping or Roughing Shoes." In the second part we have chapters consisting of "Preliminary Observations on Lameness;" "Observations on the Frequency of Lameness in Edinburgh, Birmingham, London, and Paris;" "Pathological Condition of Horses' Feet in Chronic Lameness;" "Special Causes of Lameness;" "Health of Horses regarded in its relation to Affections of the Feet," etc. Such is the design and scope of the work; and it will be observed that the arrangement is at once natural and logical. The author explains the structure and uses of the foot—shows how to prepare the foot for receiving the shoe—how to make and apply the shoe—how a badly-made and badly-fitted shoe will result in lameness—how lameness affects the general health of the horse; and lastly, how lameness and its numerous ills are to be avoided. Mr Gamgee has not sought to evade any of the many difficulties incident to his subject. He has met them fairly and honestly, and has succeeded, in our opinion, in clearing many of them away. The chapters "On the Foot—its Form and Functions;" "On Preparing the Foot;" "On Chronic and Special Lameness;" "On Physiological and Pathological Contributions of great Value;" and then "On Making and Fitting Shoes," must prove unusually acceptable to the farrier and practical horse-shoer. Altogether it would be difficult to speak too highly of Mr Gamgee's work. We have never read a book of its kind more unexceptionably worthy of general acceptance; and we shall conclude our brief remarks with recommending it to the veterinary profession, and to all farriers and owners of horses. It is emphatically one of those books which no country gentleman should be without.

A New Operation for Bony Anchylosis of the Hip-Joint with Malposition of the Limb, by subcutaneous division of the Neck of the Thigh Bone. By WILLIAM ADAMS, F.R.C.S. Illustrated, pp. 68, etc. London: J. and A. Churchill: 1871.

THIS is a very interesting little brochure, on a new operation for the relief of deformity. The author has succeeded in making quite clear what he aims at in the operation, in what cases it is applicable, and how it is to be done. It is for cases of the *bony* anchylosis of the femur in which disease is past, and nature has done her best to cure the case, and failed only in the position of the limb. It is to be tried only in cases where the head and *neck* of the bone still remain entire. It is not suited for cases in which absorption has taken place. Experience and the evidence of museum specimens show that in cases of rheumatic or pyæmic inflammation of the joint, and even in some mild cases of strumous inflammation, anchylosis may take place without any considerable absorption of the neck of the bone. The former cases seem specially suited for the operation. A large subcutaneous tenotomy knife is used to pierce fairly down to the neck of the bone, and, on its being withdrawn, a small but strong straight saw, with a double cutting edge, is introduced in the track of the knife, and, by a process of filing or sawing, the neck of the bone is cut through. The operation is laborious and sometimes tedious. Six successful cases are detailed by the author and other surgeons.

There is a valuable note by Dr Henry Dick on the previous literature of subcutaneous osteotomy, and an appendix, neither very valuable nor very profitable, contains a correspondence between Messrs Adams and Brodhurst regarding the priority of the invention. We think that Mr Adams makes out his case successfully; and that in subcutaneous osteotomy of the neck of the thigh bone he has given us a new and useful means of treatment in some rare cases of deformity.

Notizen und Erinnerungen eines Ambulanz-Chirurgen. Von WILLIAM MAC CORMAC, etc. Aus dem Englischen Ubersetzt and mit Bemerkungen versehen. Von Dr LOUIS STROMEYER. Hannover: Hann'sche Hofbuchhandlung: 1871.

WE had the pleasure of noticing Dr Mac Cormac's work in its English form. We can only say regarding the translation, that Dr Stromeyer seems to have done his part well, and has added some interesting notes as to the manner of dressing wounds, which increase the value of the work. We congratulate Mr Mac Cormac on the honour done him by so early a translation into German.

Part Third.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF EDINBURGH.

SESSION LI.—MEETING I.

Wednesday, 15th November 1871.—Dr BENNETT, *President*, in the Chair.

I. *Dr George W. Balfour* showed TWO CASES OF ANEURISM which had become consolidated while using large doses of the iodide of potassium. The first was Peter Rice, aged 39 when first admitted into the Edinburgh Royal Infirmary on the 29th of April 1867, under the care of Dr Warburton Begbie. He then had a fluidly pulsating tumour, the size of the mouth of a tumbler, to the left of the sternum and above the nipple, with all the other symptoms of aneurism developed to a very distressing degree. On the 1st of August he was transferred to Dr Balfour's ward, and remained under his care till the beginning of the following April, taking large doses of the iodide of potassium all that time.[1] On the 1st of April Rice was exhibited to this Society, just before his discharge from the Infirmary, in a much improved condition. He continued to take the iodide, though somewhat irregularly, for a year afterwards, when his case was again reported to this Society.[2] Subsequently he returned to his ordinary occupation as a mason, and is now supporting himself by day labour in the Edinburgh Botanic Gardens. His symptoms have gradually decreased, till now he is not only free from all pain and uneasiness, but appears florid and robust; no pulsation is to be felt over the former seat of the tumour, while the stethoscope reveals only an obscure thud synchronous with the heart's systole. He is, to all appearance, perfectly cured, and the consolidated aneurism in process of gradual absorption.

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[1] Ed. Med. Journal, May 1868, p. 1055, and July 1869, p. 33.

[2] *Op. cit.*, July 1869, p. 47.

The second, James Wilson, aged 44 when first admitted under Dr Balfour's care on 31st of August 1867. He had an aneurism of the innominata and lower part of carotid the size of a small orange; this is now, and has long been, reduced to the condition of a simple fusiformly dilated artery. He also had an aneurism of the abdominal aorta, which became completely consolidated under treatment by large doses of the iodide of potassium.[1] Since then he has been maintaining himself by daily labour, at first at his old trade of a mason, and latterly by lighter jobs. On the 27th of June 1870, he again came under treatment for a second abdominal aneurism developed above the first. He was treated after the old fashion, and with a similar result: now the artery in the neck is to be felt as formerly, and in the abdomen the small hard nodule of the primary aneurism is to be felt immediately beneath the larger, but equally solid, tumour of the secondary aneurism, the upper end of which disappears beneath the ribs.

II. *Dr Balfour* also showed a man who had come under his care in the Royal Infirmary in July last, labouring under diabates mellitus of between three and four years' standing. He had been treated with lactic acid according to Professor Cantani's method, and had increased in weight from 8 stone 8 pounds to upwards of 11 stone, while all trace of sugar had long since disappeared from his urine, which continued free from it, though he was now upon a mixed diet. This case will be found related at p. 538 of this Journal.

III. *Dr Balfour* also showed a piece of a lead soil-pipe which had been inserted into an iron pipe just below the seat of a water-closet. The iron had been corroded, and a way of escape thus made for the poisonous sewer gases into the house. This specimen had been removed from a house in which two fatal cases of diphtheria had occurred last summer; and Dr Balfour stated that in his experience some such source of gaseous leakage had been invariably found, when sought for, in every house where diphtheria, typhoid fever, and other allied disorders had prevailed.

IV. *Dr Joseph Bell* then showed a young man who had suffered A COMPOUND FRACTURE OF THE RIGHT ANKLE with dislocation, and extensive crushing of the tarsus, from the fall of a stone weighing half a ton from a height of ten or twelve feet. Dr Bell had been sent for to amputate the limb, but after removing the fractured portion of the fibula, preserving the periosteum, and washing out the ankle-joint and all the wound with a solution of carbolic acid and water (1 to 20), he dressed the limb antiseptically and placed it in a Macintyre splint. A rapid and complete recovery ensued, so that in three months the patient was able to walk without a stick and with very little lameness; the limbs are of the same length, and there is considerable movement in the ankle-joint.

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[1] Ed. Med. Journal, July 1868, p. 37, and July 1869, p. 48.

V. *Dr P. H. Watson* next showed:—

1. A CALCULUS WEIGHING 4½ OUNCES, removed by the high operation for lithotomy. The patient had suffered from this affection for twenty years. During that period he had seen several medical men, and by the use of medication had always been relieved. When admitted to the Infirmary, the existence of a large calculus was at once detected. On cutting him by the ordinary lateral operation, the size of the stone, and its round form, rendered all prudent efforts at its extraction perfectly futile—the calculus slipping again and again from the grasp of the forceps, which peeled off large scales of the superficial layers. In these circumstances, with the approbation of his colleagues, Dr W. operated by the hypogastric incision, and effected the removal of the calculus with some little difficulty, the bladder embracing the stone so closely as hardly to admit of its passage through the aperture in the anterior and superior aspects of the viscus. The calculus consisted of lithic acid, lithic salts, and a small amount of phosphates. The patient had made a complete recovery.

2. A CALCULUS, WEIGHING 1½ OUNCE, removed by the ordinary lateral operation from a boy æt. nine years. The case presented no special features of interest, except the size of the stone, the facility of its extraction, and the rapidity of the patient's recovery.

3. FRAGMENTS OF A CALCULUS, WEIGHING 3 DRACHMS, removed from a patient, æt. 70, by lithotrity, at a single operation.

4. THE LEFT SUPERIOR MAXILLARY BONE, affected with medullary cancer of two months' standing. The case had been recommended to Dr W.'s care by Dr Wannan of Arbroath. The disease originated over the anterior aspect of the maxilla, but had recently extended upwards, involving the floor of the orbit, displacing the globe upwards and forwards. The appearance of parts militated very much against any interference, but the history of the case indicated that the disease was still confined to the superior maxilla. To determine the extent of orbital invasion, the first part of the operation consisted of making an incision through the conjunctiva and orbital fascia beneath the globe, so as to introduce the finger and explore the limits of the orbital disease. This showed that nothing beyond the orbital plate of the maxilla was involved. The incision through the conjunctiva was carried inwards to the inner canthus, and outwards, through the commissure, to the malar margin of the orbit. From the inner extremity of this incision another was carried downwards by the ala of the nose through the upper lip. The flap thus defined, including (as will be observed) the under eyelid, was turned aside carefully from the prominent surface of the tumour. The osseous attachments of the nasal and

malar processes of the superior maxilla were then cut through, and a saw introduced into the nostril cut the bone across just above the line of the alveolar process. By careful pressure of the fingers introduced into the nostril, the whole mass was then displaced outwards and downwards. The patient has gone on satisfactorily, and the thinned cutaneous surface of the cheek dissected from the surface of the tumour has retained its vitality.

5. A SPECIMEN OF MELANOTIC CANCER OF THE LEFT CHEEK, invading the maxilla, and requiring extirpation of the whole of the soft parts of one side of the face, below the margin of the lower eyelid, as far as the angle and base of the lower jaw. This was effected, along with the anterior and outer surface of the superior maxilla, to which the cancerous growth was attached. To occupy the gap, the cutaneous tissues from one side of the forehead and scalp were raised as a large flap, and transferred to the gap, while a dissection of the soft parts on either side on a lower level, enabled them to be approximated. This patient has made as satisfactory progress as could be anticipated within a week after the operation.

6. A LARGE CYSTIC TUMOUR OF THE THIGH-BONE, extending from below the middle of the bone to the middle of the neck. The case occurred in a patient æt. 70. The patient was submitted to amputation at the hip-joint. The flap had to be obtained by dissection of the cellular cutaneous tissues from the anterior and posterior surfaces of the tumour. The bleeding was controlled by the aorta tourniquet. The patient survived the operation a fortnight; during that period most careful antiseptic dressing, together with every precaution, was employed, but the patient sank, hiccough developing itself for three days before death.

7. A CASE OF MELANOTIC SOFT CANCER OF THE RIGHT ARM, on account of which amputation was performed at the shoulder-joint. This patient had originally a single tumour, situated over the insertion of the triceps, which had been removed elsewhere, on an antecedent occasion. The disease had recurred both in the cicatrix and also in a series of apparently detached tumours, one of which corresponded to the supra-trochlear gland, another a little above this point, and another at the insertion of the deltoid. As the disease seemed limited to the level of the parts below the insertion of the deltoid, with the approval of Dr Handyside, who placed this patient under Dr W.'s care, amputation was practised below the tuberosities of the humerus, but as the inner flap-margin presented a dark purple patch, the head and neck of the humerus were extirpated by extending the incision upwards between the coracoid and acromion, and then dividing the soft parts perpendicularly through the floor of the axilla. The case had healed kindly.

8. A LARGE FIBRO-PLASTIC OR RECURRENT TUMOUR, WEIGHING 4 POUNDS, removed recently from the abdominal parietes of a female patient. The tumour had existed since its detection for only eight months. In removing this mass, the external surface of the peri-

toneum was laid bare to an extent corresponding to about half a square foot. This patient has made a good recovery.

9. The parts removed in EXCISION OF THE EXTREMITY OF THE HUMERUS in a case of comminuted fracture of the articular extremities of the humerus, radius, and ulna. The accident had occurred some months before, when the patient (about twenty years of age) fell thirty feet and lighted on his elbow. The peculiarity in this case was that the anchylosis which had resulted was treated not by excision of the elbow-joint, but by excision of the articular end of the humerus. The operation Dr Watson claimed as an original and new one for these cases. It is performed by a linear incision over the inner side of the olecranon in the line of the ulnar nerve. The nerve is dissected away with the soft parts till they can be turned over the inner condyle. The joint is then opened freely in front of the condyle, and the condyle cut off by bone-pliers. The external condyle is then cut off by the bone-pliers applied through the same opening in the other direction (*i.e.*, from within outwards and from below upwards), and twisted out of its bed with lion forceps. The end of the humerus is then turned out and smoothed off with the saw. The advantages claimed for this operation are—(1) the non-interference with the insertions of the *triceps* and *brachialis anticus*; (2) the more perfect restoration of the elbow-joint in its various movements, lateral and backward flexion being preserved.

10. AN ANGULAR WEDGE OF BONE removed from the site of the knee-joint in a case of old-standing rectangular anchylosis of the articulation. The case had terminated most successfully with a straight limb, upon which the patient, an adult male, could bear his weight in walking without assistance. In straightening the limb the hamstring tendons required division, and some old-standing cicatrices adhering to the bone were removed, so as to leave nothing but sound pliant textures to cover in the site of operation.

11. THE TUNICA VAGINALIS AND TESTIS removed from a patient, whose case simulated the conditions of strangulated scrotal hernia. The history and diagnosis of the case were the features of chief interest. According to reliable statements there was no swelling in the morning, but about 12 noon the patient complained of a sickening pain in the region of the scrotum. This part was found to be swollen and acutely tender, extending upwards along the cord, and accompanied with pain in the abdomen and sickness, but no constipation. The surface of the swelling was red and glazed, the cord at the external ring was thickened, but its normal elements could be recognised unchanged. The testicle was undistinguishable. This swelling was tympanitic upon percussion. Efforts had been made at taxis, but unavailingly. Dr Watson's diagnosis was fœtid abscess of the tunica vaginalis. He cut down carefully upon the sac, and, opening it cautiously, gave vent to a quantity of gas and stinking sero-pus. On emptying the vaginal sac the testicle was exposed, communicating with its cavity by a

small opening in the globus minor of the epididymis. The case was obviously one of abscess of the epididymis bursting into the tunica vaginalis and giving rise from its putrescent contamination to acute effusion and the other local and general symptoms. As the testicle was manifestly the site of tubercular disease, and the whole tunica vaginalis was in a sloughing state, Dr Watson cleared the cord; and, stripping away the tunica vaginalis and testes from the scrotal tissues from above downwards, he divided the cord. After securing all bleeding vessels he approximated the raw surfaces of the scrotal tissues.

12. THE ASTRAGALUS, EXTREMITIES OF THE TIBIA AND FIBULA, WITH PART OF THE OS CALCIS, removed by a single J-shaped incision from the foot of a female who for many years had suffered from disease situated between the astragalus and os calcis.

13. THE EXTERNAL MALLEOLUS AND ASTRAGALUS from a male patient in middle life, removed on account of abscess of the astragalus. The same incision was employed as in the former case.

14. THE EXTERNAL MALLEOLUS, ASTRAGALUS, THE GREATER PART OF THE OS CALCIS, together with a paring of the SCAPHOID and CUBOID BONES, on account of disease commencing between the astragalus and os calcis. Operation by same external incision.

15. THE ASTRAGALUS AND EXTERNAL MALLEOLUS from a child, removed on account of disease situated in the astragaloid joints. Removed by the same external incision.

16. THE ASTRAGALUS AND EXTERNAL MALLEOLUS in a patient upwards of fifty years of age, removed on account of disease affecting the articulations between the former and the os calcis. Removed by the same J-shaped external incision.

Dr Watson stated that in all these cases the progress had been most satisfactory, but as they had all been performed recently it was impossible to speak confidently of the absolute results. In the two last cases, which had been first operated upon, the patients could walk comfortably and support their weight upon the affected limbs without adventitious aid.

VI. *Dr Joseph Bell* then read his paper entitled CASES OF VESICO-VAGINAL FISTULA, which will appear in an early number of this Journal.

Dr Parker, from Nova Scotia, remarked that he had heard Dr Bell's paper with the greatest interest. He had frequently made use of Marion Sims hooks, and valued them highly. He believed, however, that Dr Bell would find, in regard to an instrument for introducing the needles, that there was nothing equal to the forceps invented by Dr Sands, of New York, which worked at any angle. He very much regretted he had not a pair to show, as he had accidentally lost that which he had brought with him. He regarded Dr Bell's cases as extremely interesting and very satisfactory. He himself had been utterly foiled in one case from sheer inability to find the vesical opening on account of its small size and tortuous course. A similar result had also attended an attempt made elsewhere to operate on the same patient. He considered that to carry the sutures through both mucous surfaces was perfectly correct in principle. Marion Sims had at first sternly prohibited this; but there was no doubt that such a procedure was not attended by any danger, and was often most useful.

Dr P. H. Watson regretted that the paper had been so concise in its details in regard to operations which presented such grave difficulties, and in which success had only been attained by so great an expenditure of time and patience, as well as the employment of much surgical skill. He believed that in regard to instruments and method of procedure every surgeon preferred his own, but as no two cases were ever exactly alike, the means had always to be adapted to the end desired and to the circumstances of each individual case; the tendency of modern surgery was, however, always to greater simplicity. He concluded by expressing great satisfaction at the success attained, especially in the first two cases.

Dr Handyside read a concise account of a similar, but unsuccessful, operation which had been performed by Dr Vartan, medical missionary at Smyrna. He hoped that Dr Bell's success might excite Dr V. to another attempt, which he trusted might have a more gratifying result.

Dr Craig stated that Dr Bell, in reading his paper, had made so many allusions to instrumental labours, that he would be glad to know whether Dr B. attributed the formation of the fistula to the use of the instuments, or to the lingering labour which necessitated them. He would also like to know how long after the conclusion of labour the fistula was observed?

Dr Bell replied that he was totally unacquainted with the *ars obsteterica*, but he believed that Dr Thomas Emmet, whose experience in such cases was very large, attributed it to the lingering labour, the fistula not discovering itself till some days after the conclusion of the labour.

Dr Matthews Duncan stated that a fistula only rarely declared itself at once, as it must do if it depended on instrumental injury, its appearance being delayed till after the separation of the slough originating from a lingering labour. This operation was one in which a very ordinary surgeon could attain a fair amount of success, provided he selected easy cases, where the vagina was soft and free from cicatrices or deformity. And yet even these cases were a triumph of modern surgery. Fifteen years ago, when Marion Sims first published his pamphlet, a distinguished surgeon, whose opinion regarding it he had asked, pooh-poohed the whole operation, and insisted that none were ever cured. Yet, but a short time subsequently, he (Dr D.) himself was successful in curing a large vesico-vaginal fistula. Cases thus, which but a few years ago were utterly despaired of, were nowadays constantly and successfully operated on. Cases, however, in which there was much cicatricial tissue in the vagina, and in which the openings were numerous and tortuous, taxed the skill and patience of the most careful and able surgeon, and even after he fancied he had cured a case, he often found he had to begin his work over again. He himself had cured one patient twice over as he supposed, and, after all, she had to be finished by Dr Bell, on account of a trifling leakage from a small opening near the spine of the ischium. In all cases the important parts of the operation were thoroughly to pare the edges and retain them in close apposition. And after all the ingenuity displayed in inventing buttons and splints of every different curve, he believed that the simple measures recommended by Marion Sims were by far the best. The principles of thorough paring and close apposition were not only applicable to vesico-vaginal fistula, but also to all plastic operations on the perineum or connected with recto-vaginal fistula; and it was a great glory to Marion Sims that, after all the quill and button sutures that had been invented during these many years, his simple plan still remained the best. He was surprised to hear, however, that it was now considered quite proper to pass the sutures through both mucous membranes, a proceeding which he had hitherto avoided, but which might certainly simplify operations under a variety of circumstances.

Dr Parker stated that vesico-vaginal fistula was not always due either to lingering labour or instrumental interference. He had seen them follow natural labour which had not lasted more than twelve or fourteen hours, and where no instruments had been used.

VII. *Dr George W. Balfour* then read his paper, entitled NOTES ON THE TREATMENT OF DIABETES BY LACTIC ACID (CANTANI'S METHOD). This paper is published at p. 533 of the present number of this Journal.

Dr Bennett said that, in regard to the pathology of diabetes, the great difficulty was to discover the organ in fault. The stomach, the liver, the lungs, and the nervous system had all been blamed by turns, but as yet no one had succeeded in showing which was really to blame. Dr Donkin, of Sunderland, had recently published some remarkable results attained by the use of a diet consisting entirely of skim-milk. One patient, who could with difficulty walk only half a mile, after one month's treatment consisting solely of a diet restricted to skim-milk alone, of which from eight to ten pints were taken daily, was able to walk seven miles without resting, and without fatigue or any ill consequence. In another case, after skimmed milk had produced a satisfactory result, new milk had apparently caused a return of the disease—a result attributed by Dr Donkin to the oleaginous matter which he believed capable of forming sugar in the system. Dr Donkin's cases had, however, been too few to establish anything, and the same might be said of Dr Balfour's. But if the members of the Society were to co-operate in regard to the treatment of this disease by Cantani's or Donkin's method, a large and valuable body of evidence might speedily be collected.

Dr Smart stated that some years ago he had made an extensive series of observations in regard to the production of glucose. He had employed new milk amongst other articles of diet, and had found it to be one under which the sugar most rapidly disappeared from the urine. He had accordingly placed it at the bottom of the list of articles of diet arranged according to their sugar-producing properties. These observations had been published in a concise form in the *Medical Times and Gazette* for 1863. He could not see why any preference should be accorded to skim-milk over new milk, especially as the latter was certainly the more nutritious of the two, and the mere addition of fatty matters, he had ascertained, tended to lessen the production of sugar. The lactin of milk, he had ascertained, did not pass into glucose, but rather into lactic acid,—the success of a milk diet therefore rather helped to confirm Cantani's views.

Dr G. W. Balfour, in reply, said that the great beauty of Cantani's treatment was, that it was a matter of no importance to ascertain what the organ in fault was—it was a treatment based on physiology rather than on pathology. Whatever the organ at fault might be, it was simply deprived of its pabulum, and thus placed as completely as possible at rest, while the actual product of its normal action was artificially supplied to the organism. The organ at fault was thrown completely out of gear for the time, all the other functions proceeding, nevertheless, in a perfectly natural manner. After a time the organ was again and gradually supplied with its natural pabulum, and thus restored to its natural position in the ordinary physiological sequence, when it was frequently found to have re-acquired its normal condition. As to the use of milk as an article of diet in diabetes, Headland, in his work on the Action of Medicines, recommended in his first edition (1852), "That some such substance as pepsine or the decomposing caseine of sour milk, which is capable of effecting this change out of the body," should be administered with the view of endeavouring to transform the glucose into lactic acid, which he considered the great problem to be solved. And in his second edition (1859), he states that he had read to the Medical Society of London an essay recommending the use of fresh milk as an article of diet, as it seemed that milk sugar was not liable to be turned into glucose, or to be excreted by the urine; while at the same time he recommended the administration of a smaller quantity of sour milk as a therapeutic agent, for the reasons already stated. He also mentioned that this treatment had been adopted in several cases with much success. To Dr Headland, therefore, we owe the introduction of a milk diet as a treatment for diabetes, as well as a clear recognition of the fact that lactic acid is the therapeutic agent wanted. Dr Smart had, however, confirmed Headland's view quite independently, and by his careful researches had contributed to our knowledge of the dietetics of glycosuria.

Part Fourth.

PERISCOPE.

PENETRATING WOUNDS OF THE CHEST. By Dr Revillout.—Penetrating wounds of the chest by bullets have been generally severe, and in most instances fatal. M. Gosselin has a case at present, however, whose left lung was pierced through and through by a bullet, and who is now nearly well. A vast collection of blood mixed with air formed at the time, then suppuration began; and probably there were previous adhesions between the pulmonary and parietal pleuræ.

The anterior wound was two or three finger-breadths below and behind the nipple; but as the ball had gone from below upwards, and from before backwards, the posterior wound was too high to give free discharge to the matter. M. Gosselin made a free counter-opening on the level of the anterior wound, and passed a drainage-tube from the one to the other. In four days this was removed, and the discharge diminished, and the wounds are rapidly closing.

Here the entrance of air seems to have had none of the bad effects attributed to it, nor in two other cases of suppurating pleurisy, without wound, in which M. Gosselin has obtained cures by free opening before and behind.

M. Champenois showed to the Société de Chirurgie 24 patients in whom he had successfully treated fractures by gunshot of the upper extremity—8 of the shoulder, 11 of the upper arm, 4 of the elbow, 1 of the forearm.

DISLOCATION OF THE SCAPHOID. By Dr A. Dubreuil.—In a recent clinical lecture, Richet discussed the possibility of such an accident. Broca had denied the possibility, and stated that it could not be produced on the dead body. Richet said that the bedside had often showed accidents which had been declared to be anatomically impossible. This is illustrated by the following cases:—Chassaignac, in 1860, dissected a distinct case of this accident, and gave an account of it in the *Gazette des Hôpitaux* for 1860, p. 247. I have lately dissected another. It was in a man of forty, brought to the anatomical rooms, without a history. There was no cicatrix in the skin, but the right foot was altered as follows:—Only about three-fourths of the astragalus was in its usual relation to the ankle-joint—the whole bone having been moved forwards, and the head of the bone was on a considerably lower level than usual. A distinct dislocation of the astragalo-scaphoid joint was visible; instead of being placed transversely, the scaphoid is directed obliquely downwards, and to the inner edge of the foot. Its posterior articulating surface with the astragalus is double instead of single. The head of the astragalus, instead of resting in its depression on the scaphoid, rests on a thick fibrous bundle, representing the inferior calcaneo-scaphoid ligament, which had doubtless been torn. The calcaneo-cuboid joint, and those between the scaphoid and cuneiforms, presented no unusual features. Not the slightest evidence of fracture was present.

These facts show the possibility of a dislocation between the astragalus and scaphoid, without any loss of the usual relations of the astragalus to the bones of the leg or to the os calcis, or between the cuboid and os calcis.—*Gazette des Hôpitaux*, No. 63.

CASE OF STRANGULATED HERNIA, in which the intestine was punctured and air withdrawn, with remarks and discussion.—*M. Dolbeau* reports the following case:—B., æt. 59, entered hospital for the treatment of an aggravated condition of disease of the heart. He also had a reducible hernia. This, some days after admission, without any special reason, became painful, and the patient soon showed all the classic symptoms of strangulated hernia, and was sent to the surgical wards of M. Dolbeau. The heart symptoms were by this time very urgent and alarming. This hernia was as large as a turkey's egg, in scrotum and in inguinal region, painful, hard, and resonant to percussion.

The patient seemed so weak that M. Dolbeau thought it useless to operate, but next day (the fifth since any fæcal evacuations had been obtained) the patient was a little better, so that M. Dolbeau thought of trying puncture and tapping of the intestines. Two punctures were made by the smallest needle of M. Dieulafoy's instrument,—the first obtained only some reddish fluid mixed with fæces; the second also a quantity of fluid. The tumour was diminished in size, and taxis succeeded in reducing more than half of it into the abdomen; the remaining half was not painful, and seemed omentum only. Faradization of the abdominal muscles was then used, and in four hours a stool was obtained, which was soon followed by a second. The patient unluckily died of his heart-disease in the evening. An examination of the body showed that the hernia had been reduced, and that the puncture of the intestine had not caused any communication with the peritoneal cavity. The portion of intestine was removed and inflated with air; not a single bubble of air escaped, and the intestine remained distended.

M. Boinet remarked that he had never performed the operation of puncture for hernia, but had often done in abdominal tympanitis, even five or six times in one month on the same individual. He had never seen any harm result from the punctures, which were quite innocent if performed with a sufficiently fine needle. Air and fluid can escape without causing effusion into the peritoneum, as the little aperture is at once closed by the contraction of the walls of the intestine.

M. Lâbbé thought M. Dolbeau's communication very interesting. M. Dieulafoy's instrument was better suited than any other needle or trocar. He had done it in a case of peritonitis after ovariotomy, and there was no peritoneal effusion. He had on another occasion made a different use of the needle. A patient had retention of urine, and an enormous infiltration of urine in the perineum. The catheter could not be passed, but by the syringe the water was completely drawn from the bladder. After death the puncture was found to leave no trace of its presence, nor to have caused any escape of urine.

M. Tarnier referred to a paper he had published, in which he had recorded several cases of intestinal strangulation treated by puncture of the intestine.

M. Giraldès referred to a sealed packet which he had some time before deposited with the president, in which a series of observations on puncture of the intestine in strangulated hernia were recorded. He had often done it, both in children and adults.

M. Blot had punctured the intestine with a flat needle so long ago as 1855, in a case in which cæsarian section had been performed, and peritonitis with distention had occurred, and a lump of intestine had protruded. This could not be returned from its size till punctured. The patient died next day. Yet no trace whatever of effusion into the peritoneum from the needle-wounds could be found. It is possible to puncture the intestine with a fine instrument without any danger of effusion into the peritoneum.

M. Verneuil had never performed the operation, and had some doubt of its efficacy on physiologico-pathological grounds. The intestine in these cases is paralyzed as well as strangulated, and the puncture would not have any effect in remedying the paralysis. The subject gives an opportunity of mentioning a method of the taxis in which compression of the neck of the sac is added to the ordinary pressure on the hernial tumour itself with great advantage.

M. Trelat related two cases of hernia he had recently operated on with success after eleven and fifteen days of strangulation respectively. How to account for such an unexpected result? His opinion was, that in these cases the patients had not really suffered from *strangulated* hernia, but from hernia in which adhesions between the bowel and omentum had caused an arrest on the course of the fæces.

Gosselin, in his Lectures on Hernia, describes adhesions, but thinks that they are rarely causes of accidents, as they are almost always soft, and merely the result of the peritonitis which accompanies the strangulation. In my two cases the intestine did not show the ring which generally is caused by the neck of the sac, but had adhesions which caused me to separate bowel from omentum by a careful and delicate dissection. The adhesions bled when separated in the first case so as to require perchloride of iron, and the second to resist even that styptic, and to require the use of the hot iron to several bleeding points.

M. Lâbbe thought M. Trelat's cases most important, and he agreed with him in his pathology. He had operated with success in a female of 82, in whom he had to dissect many adhesions between intestine and omentum, which bled so much as to require perchloride of iron. He described another case in which symptoms of strangulation had gone on to a fatal issue, without the existence of real strangulation, but only the presence of adhesion between bowel and omentum.

M. Giraldes had lately seen a case of hernia in which the intestine had been strangulated in a sac of omentum. Had this been reduced *en masse* the patient would have been unrelieved. This condition had been recognised and well described by English surgeons.

M. Liegeois described a case in which he had opened a cavity from which gas with a fæcal odour escaped, so that every one thought it was intestine, and the edges of it were stitched to the wound. The vomiting continued, no fæces escaped, and a future operation showed that the bowel had not been opened at all, but that it was gangrenous from being tightly strangulated by the cribriform fascia.

M. Despres mentioned a case of hernia in which Boyer had opened skin, sac, omentum, and bowel at once, they being all thin and adherent. Without destroying the adhesions or reducing the hernia he stitched up the wound, and the patient got well. The accident which M. Liegeois described had happened to many good surgeons. *Gazette des Hôpitaux*, Nos. 73, 75.

CASE OF POPLITEAL ANEURISM. By M. Duplay.—We give a very brief abstract of a case which is told in the original at considerable length.

D., a bookseller, æt. 49, had noticed five years before admission that, in walking, his right leg was more easily tired than the left, was œdematous, and, occasionally, there was pulsation in the ham. In two years more the pulsation became more evident, with a distinct tumour in the space. On admission, the tumour in the popliteal space of the right leg is soft, fluctuating, and compressible, with every symptom of aneurism, as large as a fist. The limb was emaciated. The patient complained of pain, and walks with his limb bent and toe pointed. The patient seemed to be in good general health, nor was there any indication of cardiac lesion.

April 28. After having given tincture of digitalis internally in moderate doses, treatment was commenced by forced flexion of the leg upon the thigh. This at once stopped pulsation in the tumour, but was so painful as not to be borne beyond a few minutes at a time. In time he learned to bear it for twenty minutes at a time, and this two or three times a day. After a fortnight of this no improvement took place; digital compression was also used, at Poupart's ligament, for three hours daily. In another week, still no improvement took place; so a serious attempt was made at digital compression. This had to be abandoned at the end of ten hours, in consequence of the insupportable pain it caused in the thigh. In three weeks another attempt was made for sixteen hours, which had to be stopped for the same reason as before, without having cured the tumour; but next morning the pulsation seemed less, and the tumour seemed to be a little harder. This improvement in hardness persisted for some days, but the pulsation remained as vigorous as ever. Again, after the interval of a month, digital compression was tried for thirteen hours with no appreciable benefit; so on the 2d of August, more than three months after treatment had commenced, the femoral artery was tied at the usual place, the apex of Scarpa's triangle. Everything went well except that the artery continued to pulsate so close to the seat of ligature that a hæmorrhage was feared, which occurred on 22d August, the twentieth day after the operation, with considerable violence. The wound was opened, and the artery again tied about an inch higher than before. Pulsation, however, soon returned close up to this ligature, notwithstanding the use of pressure, so on 31st August the external iliac was also tied in the usual manner, after which everything went well; the femoral ligature coming away safely on the fifteenth day, and that from the external iliac on the eighteenth day after their application. The aneurism was also slowly cured.—*Gazette des Hôpitaux*, No. 77, 1871.

Part Fifth.

MEDICAL NEWS.

The Sewage Question.—On 13th November Dr Andrew Fergus, President of the Social and Sanitary Section of the Glasgow Philosophical Society, delivered in the Corporation Buildings the opening address. The Hon. the Lord Provost presided, and introduced Dr Fergus, who said that he would principally confine his remarks to the evil effects produced on the inhabitants of cities by the way in which excreta were disposed of, and inquire whether there could be any improvement. He maintained that there was no waste in nature; that the refuse of one order of organized beings was food for the other; and that if there was waste we were living contrary to nature, and the results would be most disastrous, the true rotation of nature being from the earth to plants, from plants to animals, and back to the earth again. We had not followed this rotation, but had passed our excretions into the river. He adduced proof that these and other organic matters were the chief cause of the pollution of the river, and showed that the river itself was not injurious to health, however shocking it might be from an æsthetic point of view. This must be kept in mind by those gentlemen who wished to purify the river, and at the same time reduce the death-rate. They must begin by preventing the decomposition of excreta and other organic matters in the sewers where were generated gases capable of producing disease. Fresh excreta were not injurious to health; it was only when they decomposed that they were injurious, and the most favourable circumstances for this decomposition were that the excreta should be placed in narrow passages with a limited supply of air and water. In fact, our cesspools and sewers were ingeniously contrived chemical laboratories for the production of sewer gas. He pointed out that the connexions between the sewers and the houses were in many cases faulty and imperfect, both as water-closets, sinks, and fixed basins, and showed that to ventilate sewers was both costly and difficult. Even then we had not destroyed the gas, but simply diluted it. Having given instances of how very little sewer gas would produce typhoid fever, he remarked that gas was always being formed, and being generally lighter and frequently hotter than air, it was in a state of tension to escape at the highest openings. Dr Fergus pointed out that the reappearance of some latent epidemic, viz., diphtheria, might possibly be owing to our having taken into our system either by air or water the results of excremental pollution, and adduced proof of this assertion from the medical officers' report to the Privy Council. Dr Fergus exhibited a number of soil-pipes eaten away from within, apparently by the action of sewer gas, the perforations being generally in the upper surface. Emanations therefrom, he said, had in some cases been proved to be the direct cause of disease. He mentioned that a few years ago an outbreak of typhoid fever took place in an institution, but disappeared so soon as the pipes were renewed, and had not since manifested itself. Plumbers rarely, if ever, detect this state of pipes, as they looked for leakage, whereas the perforations being generally in the upper surface, there could be no liquid leakage. A pipe was exhibited which had been taken from a house where typhoid fever existed, and although the whole water-closet had been recently renewed, the plumber had failed to discover this state of pipes. The diseases resulting from such pipes had been, so far as he could notice them, typhoid fever, diphtheria, diarrhœa, etc. Chemical works had been blamed for this condition of things; but these pipes he had found in every water-closet town, and the worst specimen on the table had come from Edinburgh. As regards the duration of soil-pipes, we must particularly separate between ventilated and non-ventilated ones. By the former, he meant pipes carried up to the tops of the houses, and really open to the external air; and by the latter, pipes which were not open to the external air. The duration of the latter might be stated to be about twelve years—the extreme variation being from a minimum of eight years, to a maximum of twenty years. The duration of ventilated pipes might be set down at double that of the other, being twenty to twenty-three years; and for the extreme variation, from eighteen to thirty and thirty-five years. Wherever there was typhoid fever, diphtheria, or diarrhœa, the whole of the soil-piping should be uncovered and inspected, especially in the upper surface. Other diseases arising from excremental pollution were diarrhœal, including cholera. The latter was generally acknowledged to be the direct result of taking into our system the results of excremental pollution. The excess of the diarrhœal death-rate in England was in all places coincident with either tainting the air with the production of organic decomposition, especially human excrement, or the habitual drinking of impure water. He pointed out the value of the excreta, and the folly of ransacking the whole earth in pursuit of phosphates and guano, and throwing away that which was produced by ourselves, creating a nuisance, and poisoning the people. He adversely criticised sewage irrigation, and said that it never had yet been applied to the whole sewage of a large city. There were three conclusions to which he had come in considering this question: (1), that no excreta should be allowed to get into a sewer, water-course, or river; (2), that all organic nitrogen and carbon—that is, putrescible matters, refuse from manufactures, etc.—should be kept out of our sewers, water-courses, or rivers; (3), that all excreta should be submitted to chemical or other action by which they would be rendered non-putrescible. This would require an Act of Parliament, and we must not go alone for it, but have a conservancy board, including representatives from all the towns and burghs that poured their refuse into the river. If such a board carefully excluded all offensive matters, the rivers—the Clyde, for instance—would become as pure as formerly. Having pointed out several modes by which this could be done, Dr Fergus remarked that if one-tenth of the skill and ingenuity, and one-thousandth part of the money, which had been bestowed upon our water-carriage had been devoted to investigations in this direction, the problem would have been solved long ago, and a large profit derived.

EDINBURGH SCHOOL OF MEDICINE.—The winter session of the School of Medicine was opened on 1st November with an address from Mr Annandale, delivered in the lecture-room, Surgeons' Hall. Dr

Halliday Douglas, President of the Royal College of Physicians, presided; and there were also present—Mr Walker, President of the Royal College of Surgeons; Drs Strethill Wright, Borland, Rattray (Portobello), Inglis, J. A. Hunter, John Smith, Joseph Bell, Chiene, Matthews Duncan, P. D. Handyside, Stevenson Macadam, Angus Macdonald, Argyll Robertson, P. Heron Watson, John Miller, and Bailie Miller.

Mr Annandale's address is published at page 497.

On the motion of Dr Halliday Douglas, seconded by Mr Walker, a vote of thanks was given to Mr Annandale for his address.

UNIVERSITY OF EDINBURGH. — INAUGURAL ADDRESS BY THE PRINCIPAL.—The winter session of the University began on 1st November, and was inaugurated by an address from the Principal, delivered to the students and the public in Queen Street Hall. There was a large attendance. The students were accommodated chiefly in the body of the hall, and the public, including a number of ladies, in the galleries. Sir Aexander Grant was accompanied to the platform by the members of the Senatus Academicus.

Professor Kelland opened the proceedings with prayer.

The Principal's admirable address, which appeared in the newspapers of the day, commenced by congratulating the University on its increasing prosperity, of which he adduced satisfactory proofs. He also congratulated the University on the creation of a degree in Engineering, and on the addition of two new chairs, that of Geology, due the munificence of the late Sir Roderick Murchison, and that of Commercial and Political Economy, due to the enlightened liberality of the Merchant Company of Edinburgh, and on the acquisition of two men so distinguished in their several branches as Professor Geikie and Professor Hodgson.

He then went on to say that the greatest obstacle which the University has to encounter—lying in the way of our doing service to the nation at large—is the obstacle of poverty, which cramps our action, obliges the continuance of monopoly in teaching, and drives away to the richer pastures of the south the best intellects among our rising scholars. All this might have been different had the Town Council, during the two and a half centuries when they governed the University, had the foresight to purchase for it now and again a piece of land, as they did so effectively for Heriot's Hospital. Had this been done, the University would now have been in the position of sharing in what is called "the unearned increment" of wealth; the resources of learning would have been fed by the results of the progress of society, and would have been able to meet the demands ever increasingly made upon them. As it is, the University was handed over by its late rulers in pauper plight. A not very liberal grant from the Treasury was so distributed by the Commissioners as to leave most of the Professorships absolutely dependent on a compulsory curriculum and a monopoly of fees; and my friend the Dean of the Faculty of Arts gravely warned us last April against rashly meddling with those arrangements. The general fund of the University, which is all we have to look to for current expenses, consists of matriculation and graduation fees, added to the income derivable from the munificent bequest of General Reid; but the total amount is so barely sufficient for our purposes, that if by an increase in the fees during any one year an additional £50 or £100 be obtained, numerous rival claims for the money are at once preferred by different Professors, who are each able to show an urgent want of additional apparatus, class assistants, or other means of teaching. Indeed, had it not been for the good General Reid, I do not see how the ordinary work of the University could have been carried on. I give publicity to these facts in order that our real position may be known. Great as is the benefit conferred by gifts for special objects, such as bursaries, fellowships, and the endowment of chairs, I believe that what this University most of all requires, and what would do most to promote her usefulness, would be an addition to her general fund—gifts, whether in the shape of money or of lands, for general University purposes. It can hardly be doubted, gentlemen, that we are now on the eve of a new era in the histories of the Universities of Scotland. The most important of the changes which the immediate future seems to have in store for us is the reformation of the secondary schools of this country. It must excite wonder to reflect how long this much-needed measure has been delayed. Three hundred years ago, an excellent system of graded education for Scotland was planned by John Knox, but half of his scheme was never carried out; and ever since, while other countries have been constantly improving their educational systems, it is not too much to say that Scotland has remained apathetically content with a set of secondary schools, inferior, as a whole, to those of almost every civilized country. And it is not for want of protests and warnings on the subject that this has been the case. My friend Professor Blackie may claim the honour of having persistently lifted up his voice, and prophesied the truth on this matter. Nothing could be more clear or strong than the terms in which, in a letter addressed by him to the Town Council of Edinburgh, and published sixteen years ago, he exposed the low state of learning in the secondary schools of Scotland. But his words were received with a deaf ear. Professor Blackie is one of the most popular men in the community. (Laughter and applause.) The public listens to him, admires him, and laughs with him. But in his more grave and serious utterances, it suffers him to bear the fate of a Cassandra. Neither Town Councils, nor Churches, nor any bodies in authority, have ever seemed to take to heart his assurance that the one thing needful, before all others, for Scotland, is the improvement of the upper schools. This is entirely a question for the middle classes, and for the great mass of the nation, because the highest classes in Scotland have long been used to get out of the difficulty by sending their sons over the Border for education. But now, since the middle classes of Scotland make no sign of reforming their burgh schools, or of entertaining any conception what such schools ought to be, I think that there is some hope of our seeing them reformed by Government. The Education Bill for Scotland of last session, which was probably lost only through the peculiar circumstances of the session, contained clauses for bringing the burgh schools, as well as the primary schools of the country, under legislation. They were to have been placed under the administration of elective school boards; and this, I doubt not, would have been a step in the right direction. Yet still it may be questioned whether, as in England, the secondary schools ought not to be dealt with in a separate bill from that which deals with primary instruction. It is only quite recently that the Liberal Government of England have begun to abandon those economical fallacies with which they have so long been hampered—that the State has no concern with secondary education—that State education is a form of the out-door relief of paupers—that the taxpayers' money must never be devoted to assisting a man to rise out of the station in which he was born. There are manifest symptoms that these ideas are vanishing, and that a principle directly contrary to them will take their place—namely, that in every well-ordered State the very poorest should have opportunities given him of rising to any station for which his intellectual abilities may qualify him. In Scotland, the first steps of this rise have always been favoured by the parish schools, but the subsequent steps have been rendered difficult by the missing link between the parish schools and the Universities — by the want of distinctively secondary schools, adequately provided with exhibitions and bursaries for the maintenance of the most talented of the youth of the country during their period of instruction. It remains now for the Government to supply this missing link—first, by inquiring how far the rich educational endowments of Scotland, which have hitherto been greatly misapplied, and devoted to pauperizing a section of the people, may be made available for the elevation of Scotland's indigent but gifted children; and secondly, by taking measures to fill up from Imperial resources whatever may be still wanting for this purpose. When this has once been accomplished, there can be no doubt that the Universities of Scotland will take a new start. When the *élite* of the country come to us, duly prepared in high-class schools, and able to pass an examination on entrance equal to that of the *Abiturienten examen* of Prussia—(and why should they not? are the Scottish youth, as Professor Blackie asked sixteen years ago, entirely inferior in intellect to the Germans?)—when this state of things is introduced, the University of Edinburgh, at all events, will be very different from what it is now. (Loud applause.)—The benediction was pronounced by Professor Kelland, and the meeting separated.

EDINBURGH VETERINARY COLLEGE.—The winter session of the Edinburgh Veterinary College was commenced on 1st Nov., and the introductory address was given by Principal Williams. Bailie Miller, in the unavoidable absence of the Lord Provost, presided; and among those present were Bailie Howden, Dean of Guild Russel; Messrs Thomas Grieve, V.S., Manchester; James Taylor, V.S., Oldham; Hunter, V.S., Newcastle; Balfour, V.S., Kirkcaldy; Robinson, V.S., Greenock; Spreole, V.S., Dundee; Romanes, V.S., Leith; Hutcheon, V.S., Edinburgh, etc.

The Principal, in the course of his address, gave an outline of the history of veterinary art, and next sketched the rise of the Edinburgh Veterinary School, paying a grateful tribute to the memory and skill of its founder, Professor Dick. He made reference to the non-recognition by endowment of Veterinary Colleges by our Government, and went on to discuss the commercial equivalent given to those who employed veterinary surgeons. The learned Principal then went on to refer to the great spread of contagious diseases among horned cattle. When it was remembered, he said, that in 1869 an Act of Parliament was passed to prevent the diffusion of such diseases, one was inclined to ask whether they were contagious at all, or if they were not rather due to some subtle atmospheric influence. He was of opinion, and that opinion was strengthened by experience, that such diseases were introduced into this country and diffused throughout the length and breadth of the land by contagion only; and that the Act of Parliament was not sufficiently comprehensive to deal with the question. He saw from the *Scotsman* that a local authority had to be prosecuted for neglecting to carry out the provisions of the Act. Nor was this to be wondered at when they knew that not only cattle, but sheep, pigs, and even turkeys, were seized with foot-and-mouth disease by contagion. It was also a well-known fact that babies who drank the milk of cows attacked by foot-and-mouth disease were seized with the same disorder; but it might be stated that if the milk was boiled before use, no evil consequences would arise to the children. Without entering into further details in regard to the Act of Parliament and these contagious diseases, he might suggest the propriety of an early conference of the members of the veterinary profession to consider what should be suggested to the Government as the basis of a new Act, or of alterations in the present one. In conclusion, the Principal welcomed the students to another year's work, and inculcated the duty of hard and earnest study, both in the class-room and in the byre and stable.

Bailie Miller expressed the indebtedness of all present to Principal Williams for his excellent address, and stated that, without derogating in the least from the character of the past history of the College, the institution was at the present moment in a highly flourishing condition, and possessed a staff of professors second to none in any other Veterinary College in the country. (Applause.)

He then introduced to the students Mr Davidson, the new Professor of Anatomy, and Mr Whally, the new Professor of Cattle Pathology.—A vote of thanks to Bailie Miller for presiding terminated the proceedings.

SIR ROBERT CHRISTISON, Bart., M.D., President of the Royal Society of Edinburgh, twice President of the Royal College of Physicians, Physician in Ordinary to Her Majesty for Scotland, and a Professor in the University of Edinburgh of nearly fifty years' standing, and of world-wide fame, it is scarcely an additional honour to Sir Robert to be made a baronet. But as a public and well-deserved recognition of valuable academic services, of that sterling integrity and high sense of honour which have procured for him that powerful influence among his kind which is everywhere felt and acknowledged, and of those great services to science which are not less real that they are in danger of being forgotten amid the turmoil of ceaseless and rapid progress—as such, this honour has been welcomed with satisfaction by all his friends and admirers. The science of toxicology, now one of the most certain branches of forensic medicine, is based entirely on the researches of Christison and Orfila. And after Bright—and scarcely second to him—it is to the inquiries of Christison that all our modern knowledge of diseases of the kidney is mainly due. As a diligent worker and successful teacher, Sir Robert Christison has well won his baronetcy, but he has deserved it even more by the respect which his sterling honesty of purpose has secured for him with every one who has come in contact with him during his long and useful public career, and we trust he may be long spared to enjoy in a green old age that honour which has been nobly gained by a life devoted to the best interests of mankind.

EDINBURGH OBSTETRICAL SOCIETY CONVERSAZIONE.—The opening of the 31st session of this Society on the 8th Nov., was inaugurated by a *conversazione*, in its Hall, 5 St Andrew Square. The invitations issued by the President and Fellows included the names of the practitioners in the city and county, and most of the corresponding Fellows in Scotland. In addition to the Fellows of the Society present, we observed Professors Maclagan, Lister, Spence, Sanders, Balfour, etc.; Drs Littlejohn, Thos. Keith, Dycer, J. Smith, etc.

The guests were received by the President, Dr Charles Bell, who opened the proceedings by introducing Dr Keiller to the meeting, as a former President of the Society, who had been selected by the council to deliver an address. The subject chosen by Dr Keiller was, the "Progress of Obstetrics." The time allowed for the lecture did not permit the lecturer going deeply into the subject. He therefore took a comprehensive but necessarily cursory glance of the great subject, dwelling occasionally on some of the more important steps in the progress of obstetrical science. He also referred to the dangers the accoucheur and surgeon were occasionally exposed to in the exercise of their duties from actions being raised against them for mal-practice, but time did not permit him entering upon the merits of the recent case at Stockton-on-Tees, in which he gave evidence for the defender. Referring to the success of ovariotomy, he alluded in complimentary terms to the grand results of our Edinburgh operator, Dr Thomas Keith, and, before concluding, paid a tribute of respect to the memory of Simpson, a name ever well received in this Society.

On the motion of Professor Maclagan, seconded by Dr Turnbull of Coldstream, a cordial vote of thanks was awarded to Dr Keiller for his interesting address. The company then adjourned to another room, where refreshments were provided, and instruments and preparations were exhibited.

Amongst the exhibitors connected with the Society were, Professor Simpson, Dr Keiller, Dr Matthews Duncan, Dr Macdonald, Dr Young, Professor Inglis (Aberdeen), and Dr Ritchie. Professors Sanders and Turner exhibited a series of preparations of injected uteri and placentæ of the lower animals. A variety of obstetrical instruments by various inventors were also exhibited, and a pleasant and instructive evening was spent by the company.

THE ROYAL MEDICAL SOCIETY had its session inaugurated by an able address from Dr Andrew Wood, who reviewed the history of the Society, pointing out, what has been so often previously insisted on, that all its eminent members had in after years become distinguished members of the profession, and illustrating this theme by a long muster-roll of names, from Benjamin Rush down to Sir James Simpson. Dr Wood's address was well calculated to stir the youthful mind, and will, we trust, be followed by a numerous accession of new members to this the oldest and most famous of our medical societies.

SIR WILLIAM STIRLING-MAXWELL has been elected Lord Rector of the Edinburgh University.—MR DISRAELI has attained the same honour in Glasgow.

MATRICULATION AT EDINBURGH UNIVERSITY.—The number of students matriculated at this University for the current session 1871-72 up to this date (24th Nov.) is 1690, of whom 692 are matriculated in the Faculty of Arts, 53 in the Faculty of Divinity, 333 in the Faculty of Law, and 612 in the Faculty of Medicine, and of the last number, 212 have registered themselves as first year's students in the Faculty of Medicine.

WE have the pleasure to record that DR JOHN ROSE CORMACK, the founder and first editor of the *Edinburgh Monthly Journal of Medical Science*, has received the cross of Chevalier of the Legion of Honour from the French Government for his courageous and devoted services during both sieges of Paris. Dr Cormack has also received the war medal, and the cross of the Société Française de Secours aux Blessés.

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